University of Alberta

Canadian Community-Dwelling Young-Old and Old-Old: Psychosocial Determinants of Health Status and Satisfaction with Health Care

by

Dorothy Anne Forbes

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Faculty of Nursing

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled *Canadian Community-Dwelling Young-Old and Old Old: Psychosocial Determinants of Health Status and Satisfaction with Health Care* submitted by Dorothy Anne Forbes in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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ABSTRACT

The Canadian context is changing with the aging of the population and with dramatic health care restructuring that has resulted in the closure of thousands of acute care and long term care beds and cuts in social programs. Greater numbers of those 80 years of age and over will remain within their communities rather than be institutionalized. The purpose of the research was to expand existing knowledge on the determinants of health status and satisfaction with health care for the Canadian community-dwelling young-old and old-old. Sense of coherence, mastery, self-esteem, informal social support, and health services utilization were the primary focus of this study.

A correlational design was used to examine the relationships between sociodemographic indicators, psychosocial variables, health services utilization, and health status, and satisfaction with health care in the Canadian community-dwelling young-old (65-79 years) and old-old (80 years and over). A subsample (N=2,413) from the Health Canada Supplement to the 1994/95 National Population Health Survey (NPHS) was analyzed. Hierarchical regression analyses revealed that in both cohorts use of home care services had a stronger relationship with health status than did overnight hospitalizations and consultations with health care professionals; sense of coherence and mastery were better predictors of health status than sociodemographic indicators; and not surprisingly, health status was the best predictor of perceived health. The determinants of satisfaction with the national and provincial health care systems were different for the two cohorts: sociodemographic variables were the best predictors in the young-old while consultations with health care professionals was the best predictor in the old-old. As well,

consultations with health care professionals was the best predictor of satisfaction with care personally received in both cohorts. Consultations with *alternative* health professionals was found to be negatively related to satisfaction with health care in Canada and with care personally received in the old-old, suggesting that older adults who are dissatisfied with the traditional provision of health care seek services elsewhere. The identification of the best determinants of health and satisfaction with health care for the Canadian community-dwelling young-old and old-old provide direction to policy makers, program planners, and practitioners so that efforts can be made to strengthen individual, family, and community resources.

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my husband Brian, and
my sons, Sean, Stephen, and Scott
who provided an environment from which accomplishment was made possible
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CHAPTER 1

Introduction

Canada has an aging population. In 1951, 1.08 million (7.8%) of the Canadian population were aged 65 and older and of these 149,000 (1.1%) were aged 80 and over. By 1996, 3.53 million (12.2%) were aged 65 and older and the number of those aged 80 years and over had grown to 787,700 (5.1%), a 19.3% increase from the previous census (Census 1996, personal communication, January 6, 1998; Moore & Rosenberg, 1997). By 2031, the proportion of the Canadian population aged 65 and older is expected to rise to 25% (Marshall & McPherson, 1994). Not only is the Canadian population aging steadily, the internal composition of the 65-plus group contains a progressively greater proportion of people 80 years of age and older (Moore & Rosenberg, 1997). "With a growing proportion of our population being in the older age groups, it will be important to pay continued attention to the health and well-being of older Canadians" (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996, p. 25).

As well, health care restructuring is occurring at tremendous speed throughout Canada. Decreased spending and shifting resources from acute care to community care has resulted in the closure of thousands of acute-care and long-term care beds. Greater numbers of those over 80 years of age will remain within their communities rather than be institutionalized (Moore & Rosenberg, 1997). Although provinces have increased their community care budgets to some extent, there is yet no evidence that there has been a significant reallocation of funds to the community sector (National Advisory Council on Aging, 1995). Costs and individuals requiring care are being off-loaded by all levels of government to families and communities (Rachlis & Kushner, 1995; Rosenthal, 1994). As early as 1990, 15% of older adults reported that the lack of community services is problematic for them (National Advisory Council on Aging, 1990) and 40% of family caregivers of dementia persons claimed that the availability of at least one additional community service would have delayed the nursing home placement of their relative (Collins, King, & Kokinakis, 1994). Recently, the *NACA Position on Community Services in Health Care for Seniors: Progress and Challenges (*National Advisory Council on Aging, 1995) revealed the existence of gaps in the continuum of service that have resulted in inappropriate care for the elderly and their caregivers that lowers quality of life and increases health care costs in the long run. As health care restructuring unfolds, it is especially important to measure and examine over time the health status of those who are most vulnerable, the community-dwelling elderly who are 80 years of age and over. Additionally, it is important to determine the best predictors of health so that efforts can be made to strengthen individual, family, and community resources.

Historical Canadian Context

In this century the most influential definition of health has been the definition proposed by the World Health Organization (WHO) in 1947 "Health is a state of complete physical, mental, and social wellbeing and not merely the absence of disease

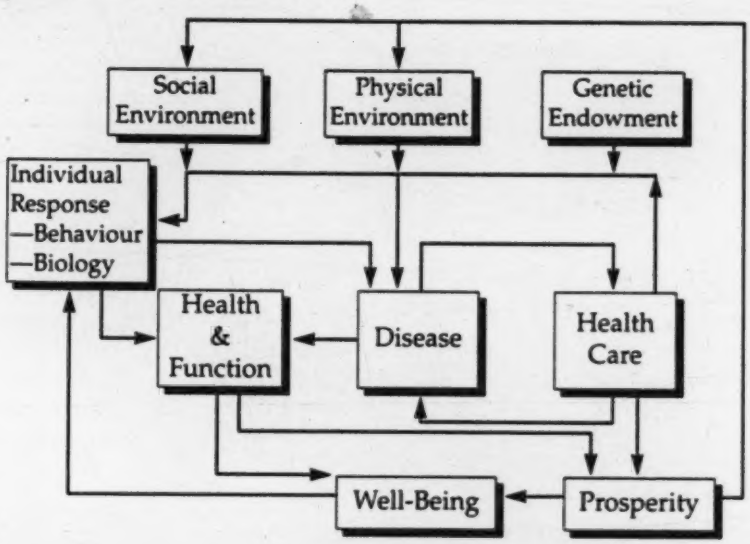
and infirmity" (Evans & Stoddart, 1994, p.28). This broad definition of health is the objective, not only of health policy, but of most human activity. The expanded concept of health and shift to non-medical determinants of health were captured in the internationally acclaimed document *A New Perspective on the Health of Canadians* (Lalonde, 1974). Human biology, lifestyle, the environment, and the availability of health services were identified as the critical factors that influence health status. Unfortunately, attention focused only on the influence of lifestyle (Pinder, 1994; Rootman & Raeburn, 1994). Although far from the intention of the author, this new perspective on the health of Canadians promoted the assumption that life-styles or behaviours and to a lesser extent living environments are *chosen* by the persons concerned. "Victim-blaming" resulted (Evans & Stoddart, 1994). However, during the 1980s discussion began to focus on other health determining factors.

A socioenvironmental, rather than a medical and lifestyle or behavioral approach, gained increasing acceptance in the 1980s. Strategies falling under the socioenvironmental approach are directed at reducing and preventing risk conditions, unlike the other two approaches which target high risk individuals or groups (Rootman, 1997). At the First International Conference on Health Promotion in 1986 two key documents were presented, *Achieving Health for All: A Framework for Health Promotion* (Epp, 1986) and *The Ottawa Charter on Health Promotion* (WHO, 1986). These documents were adopted and have had tremendous influence on how health is defined. *Achieving Health for All: A Framework for Health Promotion* (Epp, 1986) identified three key challenges to the health of Canadians a) reducing inequities in health, b) increasing the prevention of disease, and c) enhancing the capacity to cope with chronic disease and disability. Three health promotion mechanisms were outlined to address these challenges a) self-care, b) mutual-aid, and c) healthy environments. And three implementation strategies were proposed to operationalize the mechanisms a) fostering public participation, b) strengthening community health services, and c) co-ordinating healthy public policy. *The Ottawa Charter on Health Promotion* (WHO, 1986) expanded the view of health determinants or prerequisites for health to include peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice and equity. Action was called for in five areas a) build healthy public policy, b) create supportive environments, c) strengthen community action, d) develop personal skills, and e) reorient health services.

However, a gap between the determinants of health and the primary focus of policy on the health care system continued. To address this disjuncture, Evans and Stoddart (1994) developed a correctional framework within which the current evidence on the determinants of health can be assembled and no longer ignored (Figure 1). The important features of this framework "accommodate distinctions among disease, as defined and treated by the health care system; health and functioning, as perceived and experienced by individuals; and well-being, a still broader concept to which health is an important, but not the only, contributor" (Evans & Stoddart, 1994, p. 59). The framework also considers both behavioral and biological responses to social and physical environments and recognizes the economic trade-offs involved in the allocation of scarce

resources to health care instead of other activities of value to individuals and societies (Evans & Stoddart, 1994).

Figure 1
Producing Health, Consuming Health Care



Note: From Evans, R.G. & Stoddart, G.L. (1994). Producing health, consuming health care. In R.G. Evans, M.L. Barer, & T.R. Marmor (Eds.), Why are some people healthy and others not? (pp. 27-64). New York, NY: Aldine de Gruyter. Copyright by Aldine de Gruyter, a division of Walter de Gruyter, Inc., Publisher. Reprinted with permission.

The ideas emanating from several sources such as the work of Evans, Barer and Marmor (1994) in their book *Why are Some People Healthy and Others Not?* were formulated in a document *Strategies for Population Health: Investing in the Health of Canadians* (Federal, Provincial, & Territorial Advisory Committee on Population Health, 1994). This document identified health determinants as a) income and social status, b) social support networks, c) education, d) employment and working conditions, e) physical environment, f) biology and genetic endowment, g) personal health practices and coping skills, h) healthy child development, and i) health services. Adopting the population health framework would ensure a more balanced emphasis on and investment in all the determinants of health with less of a preoccupation with health care. Additionally, decisions about reallocation of resources to address the full range of health determinants would require a long term commitment as the payoffs of population health strategies will be primarily evident in the long term (Federal, Provincial, & Territorial Advisory Committee on Population Health, 1994).

There has been much debate about the differences and similarities in the concepts and principles of population health and health promotion (Rootman & Raeburn, 1994).

Health promotion is commonly defined as a process for enabling people to take control over and improve their health. Population health is an approach that addresses the entire range of factors that determine health and by so doing affects the health of the entire population (Hamilton and Bhatti, 1996). In order to combine the perspectives of population health that were adopted by the Federal, Provincial, and Territorial Health Ministers in 1994 with health promotion perspectives, Hamilton and Bhatti (1996) formulated *Population Health Promotion: An Integrated Model of Population Health and Health Promotion.* The three-dimensional model addresses the questions "Who?" "What?" and "How?". The determinants of health, as identified in the document *Strategies for Population Health: Investing in the Health of Canadians Health* (Federal, Provincial, & Territorial Advisory Committee on Population Health, 1994), intersect with each of the levels of population from individual to society, and with the five strategies proposed in the documents *The Ottawa Charter on Health Promotion* (WHO, 1986) and *Achieving Health for All: A Framework for Health Promotion* (Epp, 1986).

Recently, the National Forum on Health (1997) identified the social and economic determinants of health as meriting particular attention. "We have known for some time that the better off people are in terms of income, social status, social networks, sense of control over their lives, self-esteem, and education, the healthier they are likely to be" (National Forum on Health, 1997, p.15). Inequities are not the only issue. Health improves at each step up the slope of income, education, and social status. Wealthier people are in better health not only because they can afford to buy adequate food, clothing, shelter, and other necessities, but also because they have more choices and control over decisions in their lives (National Forum on Health, 1997). In summary, the development of the intellectual frameworks of the determinants of health is a necessary but not sufficient condition for serious reform of health policy. The test of these frameworks "will be the extent to which others find [them] useful as a set of categories in portraying complex causal patterns" (Evans & Stoddart, 1994, p. 59).

A definition of health that is consistent with the current Canadian health promotion context is taken from the work of Rootman and Raeburn (1994):

> Health...has to do with the bodily, mental, and social quality of life of people as determined in particular by psychological, societal, cultural, and policy dimensions. Health is...to be enhanced by sensible lifestyles and the equitable use of public and private resources to permit people to use their initiative individually and collectively to maintain and improve their own well-being, however they may define it (p.69).

This definition and the frameworks described above have guided the design and interpretation of the research study.

Purpose and Objectives

The purpose of the research was to expand existing knowledge on the determinants of health status and satisfaction with health care for the Canadian community-dwelling young-old and old-old. Sense of coherence (SOC), mastery, self-esteem, informal social support, and health services utilization are the primary focus of this study. The objectives of the research are:

1) To describe and compare the independent variables: biographic characteristics, socioeconomic status, geographic location, immigrant status, psychological characteristics, informal social support, and patterns of health service utilization for the community-dwelling young-old (65 - 79 years) and old-old (80 years and over). These measures include gender, marital status, income, education, province of residence, immigrant status, SOC, mastery, self-esteem, perceived support, frequency of support, social involvement, hospitalizations, use of home care services, and consultations with health care professionals, and alternative care professionals.

2) To describe and compare the health status (dependent variables) of the two cohorts. Health status was measured by a subjective measure of perceived health, the Derived Health Description Index and by an objective measure of health status, the Derived Health Status Index.

3) To describe and compare satisfaction with the national and provincial health care systems and with health care personally received (dependent variables).

4) To examine the relationships among and between the independent and dependent variables in the two cohorts.

5) To determine and compare the best predictors of health status within and between the two cohorts. Specifically, to determine and compare if SOC, self-esteem, mastery, and informal social support and then health services utilization improves prediction of health status beyond that afforded by the sociodemographic variables.

6) To determine and compare the best predictors of satisfaction with the national and provincial health care systems and with health care personally received within and between the two cohorts. Specifically, to determine and compare if SOC, self-esteem, mastery, informal social support, and perceived health and then health services utilization improves prediction of satisfaction beyond that afforded by the sociodemographic and health status variables.

Definition of Terms

Young-Old: Individuals 65 to 79 years of age.

Old-Old: Individuals 80 years of age and older.

Immigrant/Nonimmigrant Status: An immigrant population refers to persons who are not Canadian citizens by birth but have been granted the right to live in Canada. A nonimmigrant population refers to persons who are Canadian citizens by birth (Statistics Canada, 1993).

Sense of Coherence: is defined as "a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that: a) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; b) the resources are available to meet the demands posed by these stimuli; and c) these demands are challenges, worthy of investment and engagement" (Antonovsky, 1987, p. 19). The three components are referred to as *comprehensibility, manageability, and meaningfulness.*

Mastery: The concept of mastery is defined as the extent to which individuals believe that they have control over their important life developments (Pearlin & Schooler, 1978).

Self-Esteem: Rosenberg (1979) described a person with high self-esteem as having "self-respect, considers himself a person of worth....The term 'low self-esteem'...means that the individual lacks respect for himself, considers himself unworthy, inadequate, or otherwise seriously deficit as a person" (p. 54).

Social Support: is defined as "interactions with family members, friends, peers, and health care providers that communicate information, esteem, aid, and emotional help. These communications may improve coping, moderate the impact of stressors, and promote health and self care" (Stewart, 1993, p.7).

Informal Support: includes spouses, family, other relatives, friends, and neighbours who provide support.

Health Services: refers to formal support such as acute care, long-term care, home health care, and home care support.

CHAPTER 2

Selected Literature Review

Recognizing that population health is influenced by a broad range of health determinants, several variables that potentially influence the health and satisfaction with health care of Canadian community-dwelling older adults are examined in a comprehensive and interrelated way. The variables addressed in this study include sociodemographic characteristics, psychosocial variables, and use of health services. However, the psychosocial variables namely, sense of coherence (SOC), mastery, self-esteem, informal social support, and health service utilization are the independent variables of primary interest in this study. A brief overview of the present state of knowledge in relation to these determinants of health is described below.

Sociodemographic Determinants

Biographic Determinants

There is strong evidence that age, gender, marital status, and living arrangement affect health. As individuals age, the likelihood of developing minor ailments (e.g., deteriorating vision and hearing) and severe health problems (e.g., chronic pain) increases (Roberge, Berthelot, & Wolfson, 1995a). Two distinct age groups among the elderly have been revealed: the young-old and old-old (de Jong Gierveld & van Tilburg, 1995). The normal old-old were found to perform significantly less well than the normal young-old on verbal and nonverbal memory, psychomotor/executive tasks, and verbal fluency but no significant differences were found in functional disability (Corey-Bloom et al., 1996). In addition to their health status, the groups differ in important ways relative to their educational achievement, economic well-being, and living arrangements. "Examination of the predictors of health outcomes...is likely to be most useful if consideration is given to these important age differences, because the impact of predictors may differ for the young-old compared with the old-old" (Yasuda et al., 1997, p. 516).

The factors associated with decline of physical functioning in old age differ for men and women (Strawbridge, Camacho, Cohen, & Kaplan, 1993). Income, education, and marital status had significantly stronger associations with 6-year changes in physical functioning for older men while internal health locus of control was found to have a stronger association for women. No gender differences were found for ethnicity, chronic conditions, and social contacts (Strawbridge et al., 1993). Although the life expectancy at birth for women is 81.3 years and for men 75.4 years (Nault, 1997), women tend to experience the onset of activity limitations earlier than men and the rates are higher for women than for men especially in the old-old cohort. Thus, a greater proportion of women's lives are burdened with functional limitations compared to men, even after taking into account women's longer life expectancy (National Advisory Council on

Aging, 1996). It is of interest to note that a narrowing of the differences in life expectancy between men and women has been occurring since 1978 (Nault, 1997).

Given that one-third of individuals 80 years and over are men, women are more likely to be widowed at age 65 or older than are men (1996 Census, personal communication, January 6, 1998). Indeed, in 1991 two-thirds of elderly women were widowed while two-thirds of older men were married. Thirty-one percent of older adults aged 75 and over lived alone, with women almost four times as likely as men to live alone and few (11%) lived with others (Priest, 1993). Married persons have better health and well-being than those who are single, divorced, separated, or widowed, except for older single women who have higher health status than their married counterparts. These patterns for men and women may reflect socioeconomic status. For example, older single women tend to have more education and income than married, separated, or divorced women. By contrast, older single men tend to have socioeconomic status equal to or lower than married men (Liefbroer & de Jong Gierveld, 1995; Perlman & Fehr, 1987; Roberge, Berthelot, & Wolfson, 1995b).

Socioeconomic Determinants

There is wide spread evidence that individuals who are economically better off tend to live longer and healthier lives (Guralnik & Kaplan, 1989; Mustard & Frank, 1991; National Advisory Council on Aging, 1996; Roberge et al., 1995a). Several explanations have been suggested for the differences in mortality by social class. The Black Report (Townsend & Davidson, 1992) proposed that the social variations in health are related to a) an artifact of measurement error, b) social selection, c) individuals' behaviours, and d) individuals' material and social circumstances. The artifact explanation has been largely discounted due to the large number of consistent findings that have demonstrated strong socioeconomic gradients in mortality and morbidity. There is some evidence of social selection in younger ages as healthy individuals tend to be promoted while those in poor health have difficulty obtaining and maintaining employment. However, social selection is likely to account for only a small proportion of the mortality differential (Whitehead, 1992). The behaviorist explanation proposes that those in lower socioeconomic circumstances experience poor health because they are more likely to participate in health-damaging behaviours such as smoking (Fox & Benzeval, 1995). However, Blaxter (1990) suggests that socioeconomic circumstances, the individual's psychosocial environment, and the external environment are stronger determinants of health than healthy or unhealthy behaviours.

While the last 20 years have seen significant improvement in older Canadians' economic circumstances (Dooley, 1994), by the end of the 1980s both elderly women and men were affected by the downturn in the economy that resulted in a deterioration of their incomes (Moore & Rosenberg, 1997). Additionally, as individuals age, the likelihood of becoming poor increases. In the 65 to 69 year age group 20% of community-dwelling older adults are classified as poor, whereas in the 75 and over age group 32% are reported in the low income group (women are more likely than men to be

in this group). The poorest segments of the elderly population experience the highest rates of activity limitations. However, this pattern is most evident for the young-old. Among those aged 65 to 74 years roughly 20% of those rated as having a low income have a health-related activity limitation. This is approximately 8% above the rates reported by the middle and upper income groups. For the population aged 75 and over, this pattern appears quite different. The activity limitation rates for the poor and middle income groups are similar at roughly 16% while the upper income group reports lower activity limitation at 12%. These results suggest that with advanced age economic status becomes less important as a determinant of health status. However, Shahtahmasebi, Davies, & Wenger (1992) report in their longitudinal analysis of factors related to survival in old age that socioeconomic factors are important in the old-old cohort.

Strongly linked to the variation in income is the association between educational attainment and health status. Adults with a university degree are about half as likely to have high blood pressure, high blood cholesterol, or to be overweight, as are those with less than high school education (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996). Among men, differences in health status by education are particularly strong at ages 55 to 64. After age 65, the differences are not as great. Among women, on the other hand, large differences in health levels emerge at age 45 and continue throughout the older age groups (Roberge et al., 1995a). Over the next two decades the proportion of older adults who have post-secondary education will continue to increase. The effects of greater education should be monitored as one would expect higher lifetime earnings among older adults, more effective disease prevention and health promotion programs, and the elderly's enhanced ability to navigate the intricacies of the health care system (Moore & Rosenberg, 1997).

Geographic Determinants

The proportion of the population aged 65 years of age and over varies substantially among provinces and territories (Table 1). In 1996, Saskatchewan had the highest percentage of older adults and the Northwest Territories had the lowest percentage (1996 Census, personal communication, January 6, 1998). The differentials reflect the migration of working-age individuals away from rural and primary resource areas in the Atlantic and Prairie provinces and towards the urban regions of economic growth in Central and Western Canada as well as the movement of the elderly to British Columbia, Prince Edward Island, and Ontario. Additionally, in all provinces except Prince Edward Island and Saskatchewan, aging in place (the *net* effect of generalized births and deaths on an age group in a given time period), was a significantly larger factor in population aging than net migration (Moore & Rosenberg, 1997).

There are large differences in most social and economic indicators between the provinces. Average family incomes are lowest in Newfoundland and Prince Edward Island. Additionally, the eastern provinces, especially Newfoundland, fall below the national average in educational attainment and in adult literacy while the western

Table 1
Percentage of Elderly in Canada by Provinces and Territories

	1951 %	1971 %	1991 %	1996 %
Saskatchewan	8.1	10.2	14.2	14.7
Manitoba	8.4	9.7	13.4	13.7
Nova Scotia	8.5	9.2	12.6	13.1
Prince Edward Island	9.9	11.1	13.2	13.0
British Columbia	10.8	9.4	12.9	12.8
New Brunswick	7.6	8.6	12.2	12.6
Ontario	8.7	8.4	11.7	12.4
Quebec	5.7	6.8	11.2	12.1
Newfoundland	6.5	6.1	9.7	10.8
Alberta	7.1	7.3	9.1	9.9
Yukon	5.1	2.8	4.0	4.4
Northwest Territories	2.7	2.2	2.8	3.0
Canada	7.8	8.1	11.6	12.2

Note: Source: Elliot, Hunt, & Hutchison (1996) and 1996 Census, personal communication, January 6, 1998.

provinces have the highest rates. Health spending per capita was highest in British Columbia ($2,631) and lowest in Nova Scotia ($2,231) in 1994. As a percentage of Gross Domestic Product (GDP), the Atlantic provinces devote the greatest proportion of their economic resources to health, between 11.3% to 13.5%, while Alberta contributes the lowest at 7.9% of the GDP. Despite reasonably equal access to health services, there are large differences in aspects of health delivery and use. The length of stay in hospital ranges from seven to eight days in Alberta, Quebec, and Prince Edward Island to 14 days in British Columbia. This difference does not appear to be related to the greater proportion of older adults in British Columbia (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996).

The results of some of the newer health status indicators vary greatly between the provinces. In regard to perceived health, only 18% of Saskatchewan residents view their health as excellent compared with 29% of those living in Quebec. There is also a wide range in the reported rates of diseases and conditions such as depression, back problems, and other chronic health problems. Traditional health status indicators (e.g., life expectancy and mortality rates) show a more consistent pattern between the provinces. Although the differences have narrowed, residents of the Yukon and Northwest Territories have poorer health status than residents of other provinces. Those living in British Columbia and in Alberta have a slightly longer life expectancy and lower overall mortality rate than residents of other provinces (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996; Nault, 1997). Differences in provincial health outcomes may depend on the socioeconomic characteristics of each province's population. Provinces with good outcomes should be examined in order to identify their strengths for others to emulate.

Immigrant/Nonimmigrant Status

Older adults are more likely to be immigrants than are other Canadians. In 1986, immigrants accounted for 22% of those aged 65 to 74 and for over 35% of older adults aged 75 and over (Gauthier, 1991). By contrast, only 17% of all Canadians are immigrants (Boyd, 1996). Immigrants who have lived in Canada for more than 11 years are more likely to have been born in Europe (62%) whereas recent immigrants were born in Asia (53%), in Latin America (15%), and in Africa (6%) reflecting the dramatic change in source countries (Chen, Ng, & Wilkins, 1996). Additionally, approximately 40% of new immigrants speak neither English nor French upon arrival and elderly women are twice as likely as elderly men to speak neither language (National Advisory Council on Aging, 1989).

Although all migrants must adapt to new climates and new customs without much preparation or assistance, those from traditional source countries such as Europe and the United States share many important values, such as individualization, with most Canadians. In contrast, the most recent migrants hold ideas about the place of family, about religion, and about health-related values and practices that may be vastly different from the majority of Canadians. These may lead to different diagnoses of problems and to different kinds of responses, coping styles, and social support (Corin, 1994).

Immigrant older adults, the majority of whom are women, are ineligible for the broad range of social benefits available to the Canadian elderly. The financial burdens both for the individual and family are onerous (Boyd, 1989). Many live with multiple families and assist with the care of their grandchildren who are often culturally different. This immigrant population is at high risk for depression and somatic illnesses (Boyd, 1996).

An examination of the 1994/95 National Population Health Survey (NPHS) found that non-European immigrants had a significantly lower rate of hospitalizations than the Canadian-born population and European immigrants. However, consultations with a physician did not vary significantly by immigrant status. Recent immigrants were less likely to have chronic conditions or disabilities than the Canadian-born population because only those in better health were selected at the time of immigration. As the period of residence in Canada increased so did the prevalence of chronic conditions and disability (Chen, Wilkins, & Ng, 1996). Similar findings were revealed from analyses based on census data, vital statistics, and data from the Health and Activity Limitation Surveys. Immigrants, especially those from non-European countries, had a longer life expectancy and more years of life free of disability and dependency than did the Canadian-born population (Chen, Wilkins, & Ng, 1996). However, the elderly immigrant population has not specifically been examined. Perhaps factors such as the stresses of a different culture, their limited income, inability to speak English or French, and difficulty accessing and utilizing Canadian health care services may influence their health status.

Psychosocial Determinants

Sense of Coherence

Aaron Antonovsky (1987) adopted a salutogenic orientation that focused on the origins of health. This orientation was a departure from the pathogenic orientation which was a search for factors which led to disease. Antonovsky proposed that generalized resistance resources (e.g., wealth, self-esteem, mastery, cultural stability, and social support), move one toward the healthy end of the health ease/dis-ease continuum. These resources were seen as leading to life experiences which promoted the development of a strong sense of coherence (SOC), a way of seeing the world which facilitated successful coping with innumerable, complex stressors (Antonovsky, 1993b). SOC is defined as: "a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that a) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; b) the resources are available to meet the demands posed by these stimuli; and c) these demands are challenges, worthy of investment and engagement" (Antonovsky, 1987, p. 19). The three components are referred to as comprehensibility, manageability, and meaningfulness.

It is important to note that SOC is a "global" construct and the components of comprehensibility, manageability, and meaningfulness should not be measured on technical grounds (Antonovsky, 1993b). As well, SOC is "pervasive", "enduring", and "dynamic". SOC develops during childhood, adolescence, and early adulthood and is conceptualized to be stabilized by the end of young adulthood, although this feature has not been tested (Antonovsky, 1993a). However, throughout life, SOC may be significantly weakened with cataclysmic stressors and may be rebuilt by choosing appropriate resources and experiences. Change, within the context of one's previous level of SOC, can take place (Antonovsky, 1990b).

SOC has been described as a "healthy outlook" (Hood, Beaudet, & Catlin, 1996). For example, an examination of 805 Israeli people on the verge of retirement revealed that SOC is a significant variable in shaping attitudes that consist of a strong rejection of anticipating losses and a mildly positive attitude with respect to gains from entering retirement (Antonovsky, Sagy, Adler, & Visel, 1990). Moreover, while controlling for initial health status, SOC at retirement was found to contribute significantly to health status one year later (Antonovsky, 1990a). In the same study of retirees, an examination of the determinants of life satisfaction revealed that SOC has a powerful and direct relationship with life satisfaction and surprisingly the health status and life satisfaction relationship disappeared when SOC was introduced (Sagy, Antonovsky, & Adler, 1990). However, Antonovsky (1993a) cautions that, to date, there is not strong data to support the salutogenic model.

SOC may affect health in a variety of ways. SOC may promote successful coping and facilitate the selection of health-promoting behaviours. As well, a strong SOC may have direct physiological consequences by activating the brain to send messages to other

body systems which maintain a healthy balance (Antonovsky, 1987; Hood et al., 1996). The 1994/95 NPHS is the first large survey that has measured SOC. Based on this data, SOC was found to account for a substantial proportion of the total variance in the Health Utility Index scores (10%) and in the Self-Perceived Health scores (4%). The explanatory power of SOC was much lower (1%) for the number of chronic conditions. These results lend support to Antonovsky's hypothesis that SOC contributes to improved health status (Hood et al., 1996).

Mastery

Although the SOC component, manageability, resembles mastery, Antonovsky (1990a) explains that there is a fundamental difference. Mastery has to do more with believing one can personally control a situation, while manageability includes the belief that one can also turn to others for needed resources or avoid the situation if no resources are available. Additionally, while mastery is culture-bound, SOC is essentially culture-free. The concept of mastery is defined as the extent to which individuals believe that they have control over their important life developments (Pearlin & Schooler, 1978). This definition is similar to Rotter's (1966) construct of internal locus of control which is defined as a belief that an "event is contingent upon [one's] own behavior or [one's] own relatively permanent characteristics" (p. 1). In an attempt to enhance understanding and to stimulate research in this area, Marshall (1991) identified four dimensions of internal health locus of control a) illness prevention, b) illness management, c) self-mastery over health outcomes, and d) self-blame for negative outcomes. Of these dimensions, only self-mastery was found to be independently associated with physical health and well-being and uniquely and negatively associated with age among adults.

Two generic models that explain the influence of control on health status have been developed (Cohen, 1990). The *main-effect model* suggests that control has a beneficial influence irrespective of whether persons are under stress. The *stress-buffering model* proposes that control operates by protecting people from the potentially harmful influence of stressful events. Possible mechanisms for both models include access to good sources of information, access to tangible and economic services that result in better health, and having a generalized positive affect and a recognition of self-worth. These positive psychological states may result in increased motivation to care for oneself, may suppress neuroendocrine responses, and may enhance immunological competence (Rodin & Timko, 1992).

Much has been written about the relationship between age and sense of control (Marshall, 1991; Mirowsky, 1995; Rodin & Timko, 1992). Although contradictory results have appeared in the literature, the majority of researchers have hypothesized that environmental factors (e.g., loss of roles and appropriate reference groups), biological changes (e.g., loss of physical abilities), and the negative stereotyping that accompany old age contribute to perceived and actual control. Older age groups tend to feel less in control than younger adults. Mirowsky (1995) reported that physical impairment and low education accounted for much of the low sense of control by older respondents with

education accounting for more of the age-group differences than impairment. The importance of education may be related to the role education plays in developing human resourcefulness. In comparison to younger groups, older adults demonstrate greater variability in perceptions of control (Lachman, 1986) and in optimal or preferred levels of control (Rodin, 1990). Some older adults benefit more than others from being highly informed about and involved in their own treatments and care, depending on their orientations toward external and internal control over events (Coulton, Dunkle, Haug, Chow, & Vielhaber, 1989). And sometimes greater control over circumstances or health has negative consequences including stress, worry, and self-blame. The negative effects are perhaps most profound for the aged (Rodin & Timko, 1992).

Sense of control has also been shown to be positively related to gender (males), education, income, occupational status, and White race. It is negatively associated with frequency of undesirable events, intensity of problems, and is related to culture and social policy (Abeles, 1990; Foner, 1990; Galanos, Strauss, & Pieper, 1994; Mirowsky, 1995; Schooler, 1990; Syme, 1990). The interactive effect of control and social support has been well documented (Health Canada, 1994; Peterson, 1990; Ross & Mirowsky, 1989). However, the literature is contradictory as some researchers (Pearlin, Menaghan, Leiberman, & Mullen, 1981; Seeman & Syme, 1987; Syme, 1990) found that individuals with high levels of social support are in a better position to control the events that impinge upon them whereas others (Ross & Mirowsky, 1989) found that control and support can substitute for one another to decrease depression. A high level of either support or control reduces the need for the other and a low level of one is remedied by a high level of the other (Cutrona & Russell, 1990). Further exploration of the interactive effect of support and mastery is needed.

Extensive research has demonstrated that a sense of low control is significantly associated with less self-initiated preventive care, greater dependence upon the physician, less optimism concerning the efficacy of early treatment, more bed confinement, more illness episodes, poorer self-rated health (Marshall, 1991; Rodin, 1986, 1990; Seeman & Seeman, 1983), increased depression (Bienenfeld, Koenig, Larson, & Sherrill, 1997; Marshall & Lang, 1990; Penninx et al., 1997a; Ross & Mirowsky, 1989; Turner & Noh, 1988; Wallhagen, 1992-93), decreased mental health (Roberts, Dunkle, & Haug, 1994), greater psychosocial symptoms (Krause, 1994; Seeman, M. & Lewis, 1995), and decreased life satisfaction (Bienenfeld et al., 1997; Wallhagen, 1992-93). Indeed, greater feelings of mastery in community-dwelling elderly were found to reduce the risk of death. These effects did not disappear when additional adjustment for physical limitations, self-rated health, smoking, and use of alcohol were included, suggesting that mastery has a direct effect on mortality (Penninx et al., 1997b). Additionally, high initial powerlessness scores were associated with health problems observed five to ten years later, demonstrating the prospective prediction ability of powerlessness (Seeman, M. & Lewis, 1995).

Self-Esteem

Self-esteem is the evaluative component of the self-concept and has been one of the most frequently measured constructs in health sciences research. Rosenberg (1979) described a person with high self-esteem as one who has "self-respect, considers himself a person of worth....The term 'low self-esteem'...means that the individual lacks respect for himself, considers himself unworthy, inadequate, or otherwise seriously deficit as a person" (p. 54). Recently, research has begun to examine two dimensions of self-esteem, self-worth and self-efficacy (Dietz, 1996). However, the focus of the present research includes only the dimension of self-worth.

Self-esteem has been reported to be significantly higher: for those with higher income, education, and social class; for men than women; amongst older individuals; and for those with high life-satisfaction (Dietz, 1996; Gove, Ortega, & Style, 1989; Hong, Bianca, Bianca, & Bollington, 1993; Kohn, 1969; O'Brien, 1991; Pearlin & Schooler, 1978; Rosenberg, 1979; Winefield, Winefield, Tiggemann, & Goldney, 1991). Several studies have also reported positive correlations between self-esteem and mastery and social support (Chowdhary, 1990; Dweck, 1975; Fitch, 1970; Revicki & Mitchell, 1986; Robinson, 1990). It is important to note that self-esteem appears to stabilize by the early twenties (Broomhall & Winefield, 1990) and a reciprocal relationship appears to exist between self-esteem and many of the other sociodemographic variables such as life-satisfaction (Diener, 1984).

While most studies have examined the self-esteem of children, adolescents, and adults, a few have studied self-esteem among older adults. Murrell, Meeks, and Walker (1991) found that good health and high self-esteem appeared to ward off depressed feelings in older adults over a two year period. Good health served as a somewhat stronger well-being maintenance function than self-esteem but also appeared more reactive to undesirable events. Krause (1987a) demonstrated that stress motivates older adults to seek the support of others and the support provided by others indirectly affects psychological well-being by bolstering feelings of self-worth and positive self-esteem. This study is noteworthy as it captured the support mobilization process (Gottlieb, 1991). Self-esteem may also play a role in modulating patterns of neuroendocrine response to cognitive/behavioral challenges in the lives of older individuals. Indeed, individuals low in self-esteem exhibited a nearly six-fold greater cortisol response to a driving challenge than those reporting high self-esteem (Seeman T. et al., 1995).

Cooper (1983) was unable to improve self-esteem among a group of older persons living in a senior's apartment building by using photo-reminiscence or reality therapy. However, Chowdhary (1990) demonstrated that having input into the decision-making process enhanced institutionalized elderly males' self-esteem and Shephard (1990) reported that aerobic exercise among the very old was effective in enhancing self-esteem. Raphael (1993) concluded in his review of self-esteem that research in other areas such as self-efficacy, mastery, and locus of control have made greater strides in postulating the links with health. "How one feels about themselves does not easily translate into

activities related to health maintenance and health promotion...The mechanisms by which self-esteem comes about and can be modified and assisted can best be understood within alternative conceptualizations" (p. 22). Although self-esteem appears to be an important component, other factors are necessary and perhaps more influential in promoting health.

In summary, all three psychological characteristics of older adults, namely, SOC, mastery, and self-esteem, are linked with health. These characteristics have a focus on successful coping, can be understood in transactional contexts, and can make direct as well as buffering contributions to health (Antonovsky, 1991). While empirical correlations can be found between the three, there are fundamental differences. SOC is a more generalized construct that encompasses mastery and self-esteem. Antonovsky (1990a) views concepts such as self-esteem, mastery, and social support as *generalized resistance resources.* Self-esteem refers to beliefs about self-worth or capacity while mastery refers to views about the link between behaviour and outcome.

Informal Social Support

Social support has a significant impact on the health status and mortality risk of older adults (Shye, Mullooly, Freeborn, & Pope, 1995). Indeed, some experts in the field have concluded that the health effect of social relationships may be as important as established risk factors such as smoking, physical inactivity, obesity, and high blood pressure (Mustard & Frank, 1991). Social support is defined as

> interactions with family members, friends, peers, and health care providers that communicate information, esteem, aid, and emotional help. These communications may improve coping, moderate the impact of stressors, and promote health and self care. Social support occurs as a by-product of people's ongoing interactions. However, we cannot assume that it is accessible or beneficial (Stewart, 1993, p. 7).

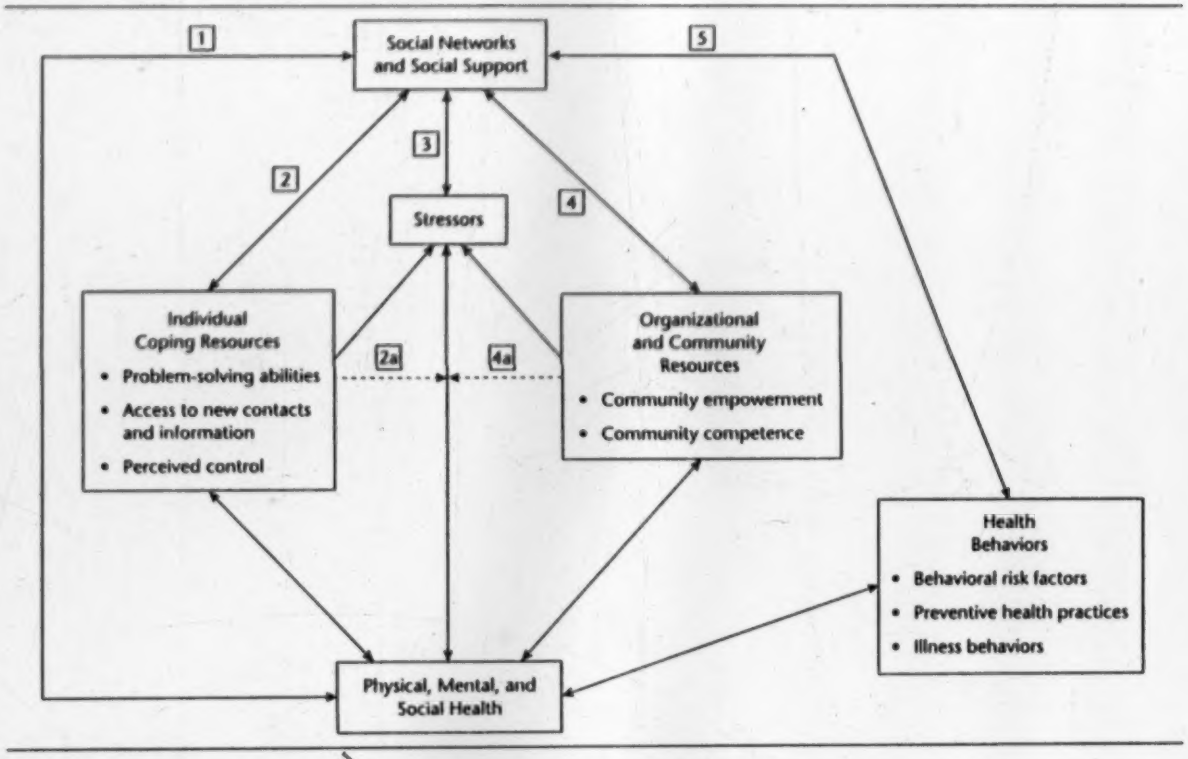
The multifaceted dimensions of the construct of social support encompass structure, function, appraisal, and duration (Stewart, 1995). The *structure* of social support comprises lay and professional sources of support. The *functions* of support are informational, affirmational, instrumental, and emotional. These dimensions reflect Cutrona and Russell's (1990) review which identified five distinct dimensions of social support a) information, b) esteem (appraisal), c) tangible (instrumental), d) emotional, and e) social integration. Functions received from support sources are appraised by the recipient with respect to direction (unidirectional/non-reciprocal or bidirectional/reciprocal), and drawbacks or benefits. Lastly, the timing of support and duration, that is, whether it endures or dissipates over time are also important dimensions as it has been shown that there tends to be a decrease in the amount of total support over time in chronically stressful situations (Bernard et al., 1990).

House, Umberson, and Landis (1988) identified three broader dimensions a) social integration/isolation, b) social network structure, and c) relational content. Social integration/isolation refers to the existence or quantity of social ties, the type (e.g., spouse, friend), and frequency of contact. Social network structure refers to the structural properties that characterize relationships. These may be either dyadic, characterizing the relationship between the recipient and another person, or network variables that characterize the relationship between the recipient and two or more persons. Dyadic relationships include characteristics such as the extent to which resources and support are both given and received in a relationship (reciprocity), the extent to which a relationship is characterized by emotional closeness (intensity), and the extent to which a relationship serves a variety of functions (complexity). Network characteristics include the extent to which network members are similar in terms of demographic characteristics such as age and socioeconomic status (homogeneity), the extent to which members live in close proximity (geographic dispersion), and the extent to which members know and interact with each other (density) (Heaney & Israel, 1997). Lastly, relational content refers to the functional nature or quality of social relationships. Important forms of relational content are: *social support*, the positive, potentially health promoting aspects of relationships; *relational demands and conflicts*, the negative aspects that may be deleterious to health; and *social regulation or control*, the controlling or regulating quality of social relationships that may be either health promoting or health damaging.

Similar to the research on control, three models that explain the influence of social support on health status have been developed a) social support may prevent stress (mediating-effect model), b) social support buffers or cushions stress (buffering model), and c) social support may have a direct positive effect on health unrelated to stress (main-effect model) (Stewart, 1995). The *main-effect model* proposes that "social support benefits well-being directly by fulfilling basic social needs (Thoits, 1982) and enhancing social integration (Cohen & Wills, 1985)" (Stewart, 1995, p. 104). This kind of direct social support may be through emotionally induced effects on neuroendocrine or immune system functioning which in turn may prevent certain illnesses (Ader & Cohen, 1989; Geiser, 1989) or through the influence of health-related behaviour patterns such as cigarette smoking, alcohol use, or medical help seeking (Cohen & Wills, 1985). The *buffering model* posits "that support protects individuals from potentially harmful influences of stressful situations and enhances coping abilities" (Stewart, 1995, p. 104). Social support around stressful life events can enhance coping by meeting needs or by appraising the event as less likely to have harmful consequences (Cohen & Wills, 1985). The *mediating-effect model* predicts that "social support acts as an intervening variable influencing indirectly the effects of stress on health" (Stewart, 1995, p. 104).

Heaney and Israel (1997) provide a conceptual model of the relationship of social support to health (Figure 2). Pathway 1 represents a hypothesized direct effect of social support on health. By meeting basic human needs for companionship, intimacy, a sense of belonging, and reassurance of one's worth, supportive ties enhance health regardless of stress levels. Pathways 2 and 4 represent a hypothesized effect of social support on

Figure 2
Conceptual Model of Relationship of Social Support to Health



Note: From Heaney, C.A. & Israel, B.A. (1997). Social networks and social support. In K. Glanz, F.M. Lewis, B.K. Rimer (Eds.), Health behavior and health education: Theory, research, and practice (pp. 184). San Francisco: Jossey-Bass Publishers. Copyright by Jossey-Bass Inc., Publishers. Reprinted by permission.

individual coping resources and community resources respectively. Social support networks can suggest new contacts, new information, and new ways of interpreting and solving problems. If the support provided helps to reduce uncertainty and unpredictability or helps to produce desired outcomes, then a sense of mastery will be enhanced. As well, intentional network building and strengthening social support within communities are associated with enhanced community capacity and control.

Individual coping resources and community resources may also have an indirect effect on health. The buffering effect is reflected in pathways 2a and 4a. Pathway 3 suggests that social support may influence the frequency and duration of exposure to stressors. Pathway 5 makes explicit the influence of social support on behavioral risk factors, preventive health behaviour, and illness behaviour by impacting on the incidence of, diagnosis of, and recovery from disease.

A paucity of research exists in relation to the impact of age on social networks. In some studies, a stable pattern of network participation is reported with increasing age (Costa, Zonderman, & McCrae, 1985). Other studies reveal that increasing age is associated with a decline in network size which is attributable to the loss of age peers and to a process of selective withdrawal from relationships and from participation in voluntary organizations (Dykstra, 1995; Glass, de Leon, Seeman, & Berkman, 1997; Morgan, 1988). However, decreasing network size may not impact on health if such declines are offset by increased support from fewer ties (Antonucci & Akiyama, 1997; Stoller & Puglieski, 1988). Indeed, Carstensen and Lang (1997) found this to be the case; older adults have a greater proportion of emotionally meaningful social partners as a result of "distilling", an active process of maintaining only close relationships. Individuals over the age of 65 also receive more instrumental support and lesser emotional support than younger individuals. The exchanges between older adults and their networks are generally characterized by balance. Instrumental support is compensated for by emotional support (van Tilburg, van Groenou, & Thomese, 1995).

The research findings in regard to the relationship between socioeconomic status and social networks are also inconsistent. Some studies suggest larger networks for higher status groups (Thomas, Garry, Goodwin, & Goodwin, 1985; Turner & Marino, 1994) while others report the reverse (Kutner, 1987). The complexity of this relationship was reflected in a study conducted by Glass and colleagues (1997) that revealed lower income to be associated with less extensive networks of children but more extensive networks in the domain of confidant. Krause and Borawski-Clark (1995) examined the relationship of social class differences to multifaceted aspects of social support. They reported that older adults in upper income and educational categories have more contact with friends, tend to provide support to others more frequently, and are more likely to be satisfied with the support they receive from others when compared to older adults in the middle and lower social class categories. However, no significant differences between the social classes were found in relation to contact with family, support received from others, and negative interactions.

Gender has been shown to be significantly correlated with who helped, even when controlling for availability of that person, extent of the illness, other health factors, and social network characteristics (Chappell, Segall, & Lewis, 1990). Men are more likely than women to receive assistance from a spouse and women are more likely to have intimate, confiding relationships with a non-spouse (Elliot et al., 1996; Glass et al., 1997). Siblings, other kin, and friends are more prominent in women's than in men's networks (Dykstra, 1995). Women and men are also differently involved in the exchange of support. Men are more active in the exchange of instrumental support, whereas women exhibit a higher intensity of emotional support exchanges (van Tilburg et al., 1995). Additionally, social support has been shown to affect mortality differently for men and women. Network size had a direct protective effect on mortality risk for both men and women, however, men gained protection at a lower level of network size than women (Shye et al., 1995).

As previously discussed, married persons have better health and well-being, except for older single women who have better health than their married counterparts. It has been suggested that given women's larger networks and greater emotional and practical involvement in them, the caregiving role undertaken by many women may attach costs to women that men do not incur (Shye et al., 1995). Although those living with a partner have higher rates of social participation, a larger social network, and more intensive supportive exchanges (Knipscheer & Dykstra, 1995), the importance of marital status may be less for older adults. Ties with friends and relatives may assume greater importance as one ages (Steinbach, 1992).

The meaning and scope of social support can also vary considerably in different cultures. Regardless of the social support actually available, individual and collective norms and expectations determine the specific types of support people prefer and feel entitled to rely on (Aranda & Knight, 1997; Corin, 1994). Blacks have been shown to have larger family networks than Whites but their secondary friendship networks are equal in size to Whites (Ball, Warheit, Vandiver, & Holzer, 1980; Glass et al., 1997; Mui & Burnette, 1994; Palmore, 1981). Latino social networks were found to be larger, composed of more multigenerational households, extended family, and non-kin than Anglos (Aranda & Knight, 1997).

Personality traits such as assertiveness, self esteem, and self-confidence have been shown to contribute to the effects of social support (Elliott & Gramling, 1990; Holahan & Moos, 1991; Krause, 1987a; Robinson, 1990). Dooley (1985) argues that socially competent individuals may have more social ties and are more effective at negotiating the health care system. Such individuals are more likely to receive optimal treatment and care.

Geographic location can also impact on social support. Social integration was found to be more prevalent, but less predictive of mortality in small rural communities than in urban centres (Berkman, 1984; House, Umberson, & Landis, 1988). Berkman (1984) hypothesized that some communities, such as the rural communities studied, may

be so cohesive and well integrated that few of the residents are placed at risk of poor health due to lack of social support.

Increased mortality has been demonstrated in the absence of an intimate, confiding, and close relationship (Brown & Bifulco, 1985; Pennix et al., 1997b). For example, a study that examined 5,151 community-dwelling older adults revealed that social networks are negatively related to mortality when controlling for socioeconomic characteristics and baseline health status. Older adults who participated in some form of social activity and who visited or talked with friends or relatives decreased their risk of mortality by almost half. Race and income were not found to be predictive of mortality (Steinback, 1992). This study supported the findings of previous epidemiological studies that demonstrated that a lack of social ties is clearly associated with increased risk of mortality (Berkman & Syme, 1979; House, Robbins, & Metzner, 1982; Schoenbach, Kaplan, Fredman, & Kleinbaum, 1986). However, it is important to note that a negative association between instrumental aspects of support and mortality has been demonstrated (Pennnix et al., 1997b). As well, a greater frequency of instrumental support was reported to be a significant predictor of *increased* risk of onset of new or recurrent activities of daily living (ADL) disability particularly among older men even after controlling for variations in physical performance abilities. This association may reflect the consequences of greater reliance on others which may erode the recipient's confidence in functioning independently. Such reductions in perceived competency may lead to declines in performance of ADL (Seeman, T.E., Bruce, & McAvay, 1996).

The effect of social support on specific morbidities has not been as conclusive (Heaney and Israel, 1997). Although the evidence is not strong, a positive role for support in the processes of coping with and recovering from chronic and acute illnesses has been found (Kaplan & Toshima, 1990; Kriegsman, van Eijk, Penninx, Deeg, & Boeke, 1997; Penninx et al., 1997a; Primomo, Yates, & Woods, 1990; Spiegel, 1992). Social support also appears to reduce hospitalizations (Wan & Weissert, 1981), decreases use of emergency services (Coe, Wolinsky, Miller, & Prendergast, 1985), and prevents or postpones institutionalizations (Steinbach, 1992). In addition, research evidence suggests that social support influences health behaviour in the areas of compliance with medical regimens (Hanson, Henggeler, & Burghen 1987; Levy, 1983), help-seeking behaviour (McKinlay, 1980; Zimmerman & Connor, 1989), smoking cessation (Mermelstein, Lichtenstein, & McIntyre, 1983), blood pressure control (Morisky, DeMuth, Field-Fass, Green, & Levine, 1985), and weight loss (Epstein & Wing, 1987), to name a few. In summary, epidemiological studies clearly link the availability of a support network to positive health outcomes, but there are many contradictions in the literature about the pathways by which supportive social relationships influence health.

In 1994-95, 15% of Canadian men and 26% of Canadian women aged 55 and over living in the community (1.2 million people) reported that they require assistance with at least one activity of daily living. For those aged 75 and over, 27% of Canadian men and 46% of Canadian women needed assistance with heavy housework (Wilkins & Park, 1996). However, it is important to note that 31% of older adults also provide

assistance to others in the form of personal care, child care, volunteer work, and listening and offering advice and support (Kincade et al., 1996). Family members or friends provide 75% to 85% of the help received by older adults needing care in the community, with spouses providing the most assistance followed by daughters, sons, and friends (Elliot et al., 1996). Siblings are also a potential important source of emotional support for older adults (Connidis, 1994).

Although older adults receive extensive informal support, they do not always live in close proximity to family members and friends. Among men and women 75 years and older who live alone, only 20% reported that they have a close family member in the same neighbourhood and only 35% had their closest friend in the same neighbourhood (Moore & Rosenberg, 1997). However, Liefbroer and de Jong Gierveld (1995) caution that predictions of future support systems of older adults should not be based on demographic data alone.

Supportive efforts are successful in some situations but not in others. To be beneficial, social support must fit the contextual features of the stressor. These features include desirability, controllability, duration, and social roles (Lanza & Revenson, 1993). Dakof and Taylor (1990) found that the effectiveness of supportive interventions depends upon the context as particular actions are perceived to be helpful from some but not other network members. For example, a frail elderly man may willingly accept assistance with his bath from his spouse but not from his daughter. Family members tend to provide more affective support than friends or others and friends provide more affirmation than family or others (Primomo et al., 1990). Additionally, the effectiveness of social support varies as a function of the nature of the provider's and recipient's reciprocal supportive relationships (Neufeld & Harrison, 1995; Sarason, Pierce, Bannerman, & Sarason, 1993). In a qualitative study, Neufeld and Harrison (1995) identified four variations of reciprocity a) reciprocity, b) generalized reciprocity, c) waived reciprocity, and d) constructed reciprocity in women caregivers of cognitively impaired older adults and mothers of premature infants. The women who perceived their relationships to be reciprocal reported high self-esteem, ability to ask for support, and satisfaction with their ability to care.

The burden experienced by some family members who care for the frail and demented elderly is well documented in the literature (Brody, 1985; Lindsay, 1994; McDaniel & Gee, 1993). Physical burden (e.g., chronic fatigue), emotional burden (e.g., negative feelings towards the elderly individual), social burden (e.g., role conflict and isolation), time-dependence burden (e.g., restrictions on the caregiver's time), and economic costs have been reported (Archbold, 1980; Biegel, Sales, & Schulz, 1991; Gaynor, 1990; Kosberg, Cairl, & Keller, 1990; Lindsay, 1994; Novak & Guest, 1989; Schene, 1990). However, few informal caregivers access paid support services such as home care and respite care as these services are often viewed as a last resort, rather than as a way to prevent or alleviate their own stress (Lindsay, 1994; McCabe, Sand, Yeaworth, & Nieveen, 1995; Pullwitt & Fischer, 1996; Strang, Greschuk, McIlveen, & Gadacz, 1992). When formal support is accessed, it complements rather than substitutes

for informal support (Chappell, 1985; Health Services Utilization and Research Commission, 1996).

In summary, a review of the literature revealed contradictory findings regarding the association between social support and health. For example, Thomas and colleagues (1985) reported a positive relationship between social support and quality of life as measured in terms of health and longevity among elders. Whereas Lin and colleagues (1979) reported only a weak relationship. Heaney and Israel (1997) and Krause (1987b) suggested a non-linear relationship between social support and well-being, arguing that very low levels of social support are most deleterious with higher levels being less advantageous once a threshold level has been achieved. Others (Chappell, 1992; Gore, 1985) have argued that the relationship between social support and well-being is spurious. For example, social competence or the ability to engage in help-seeking behaviour explains the relationship between social support and well-being. Further examination of the impact and interactive effect of social support on the health status of Canadian community-dwelling older adults is needed. According to the Federal, Provincial and Territorial Advisory Committee on Population Health (1996) "there are few available data on social supports in Canada. This is an area that should be more extensively researched and monitored" (p. 72).

Health Care Services Utilization

Over the past 20 years the Andersen and Newman (1973) model has been used almost exclusively to conceptually organize health services utilization research. The original model operationalized the dependent variables as the use or non-use of certain services or level of consumption. The independent variables were organized into societal determinants (e.g., medical technology and social norms), health care system determinants (e.g., structure and nature of services), and individual determinants. The individual variables were composed of predisposing (e.g., age, gender, and informal support), enabling (e.g., knowledge of the service and income), and need variables (e.g., subjective and objective measures of health). In empirical applications of the model, the individual variables have been primarily examined (Crets, 1996).

Use of formal (public and commercial) health services is a function of many biographic, social, economic, and political influences that determine who has access to services and under what conditions (Moore & Rosenberg, 1997). The most frequently reported and single strongest predictor of utilization of formal care is functional disability (Branch et al., 1988; Bull, 1994; Butler, Secundy, & Romberg, 1994; Chappell, 1994; Diwan, Berger, & Manns, 1997; Frederiks et al., 1992; Fredman, Droge, & Rabin, 1992; Grabbe et al., 1995; Kemper, 1992; Logan & Spitze, 1994; Moore & Rosenberg, 1997; Mor, Wilcox, Radowski, & Hiris, 1994; Mui & Burnette, 1994; Tennstedt, Crawford, & McKinlay, 1993).

Although functional capacity has been shown to be the crucial factor in determining the use of health services by older adults, the effect is modified by a variety

of other factors (Crets, 1996). The availability of informal support and living with another have been found to be inversely related to the utilization of professional services (Frederiks et al., 1992; Kemper, 1992; Solomon et al., 1993; Tennstedt et al., 1993). However, Wan (1987) and Chappell (1987) found that social support has a positive influence on the use of formal services and Kempen and Suurmeijer (1991) found conflicting results. The Pearson product-moment coefficient between amount of informal support and professional home care was found to be positive while in the hierarchical multiple regression equation the coefficient became negative. When the influence of instrumental activities of daily living (IADL) and ADL problems was ruled out, the relationship became negative. A possible explanation to the confusion in the research literature is suggested by Logan and Spitze (1994). They propose that the informal support systems of older adults provide two functions: a compensatory process, where family support substitutes for formal support; and a bridging function where the informal network helps link the older adult to services.

Other sociodemographic predictors of health service use were found to be: gender with women more likely to seek help than men (Kempen & Suurmeijer, 1991; Millar & Beaudet, 1996); ethnicity with Whites reporting greater use of community-based services (Mui & Burnette, 1994; Wallace & Hirst, 1996) and medical care (Escarce, Epstein, Colby, & Schwartz, 1993) than Blacks; higher levels of education (Kempen & Suurmeijer, 1991; McAuley & Arling, 1984), although Solomon and colleagues (1993) found educational level less than 12 years predicted use of home care; income with use of formal care increasing with higher income and the use of informal care decreasing (Kemper, 1992); lower self-esteem and locus of control (Butler et al., 1994; Mui & Burnette, 1994); prevalence and type of chronic condition (Blaum, Liang, & Liu, 1994; Millar & Beaudet, 1996); living alone (McCallum et al., 1996; Moore & Rosenberg, 1997); living in metropolitan areas (Moore & Rosenberg, 1997); and province of residence (Moore & Rosenberg, 1997). Interestingly, lower hospital use was found in urban regions while lower medical services tended to occur in rural areas. This pattern of utilization of services was perhaps related to differences in access to services as medical care was less available in the rural areas often necessitating overnight observation in hospital (Alberta Health, 1996). Moore and Rosenberg (1997) reported that older adults living in British Columbia were far more likely to use formal health care services than those living in other provinces. They propose that there are two reasons for this a) the greater availability of services in British Columbia, and b) the high proportion of the older adults who were born outside of the province and consequently less likely to have family nearby to provide assistance.

Recently, enormous attention has been given to the claim that the health care system is about to be engulfed in a "wave of grey" (Barer, Evans, & Hertzman, 1995). However, Barer and colleagues (1995), Foot (1989), Gee and McDaniel (1994), McDaniel (1987), Moore and Rosenberg (1997), and Northcott (1994), warn that to view aging as a cause of recent cost escalation and extensive future costs is largely unsubstantiated and misplaces the sources of our concerns. Rather, health care utilization has increased dramatically among older adults not because there are more of them but

because much more health care is being provided to the elderly (Barer et al., 1995; Haan et al., 1997; Wagner, 1997). Older adults have occupied an increasing share of declining acute care beds (30 to 40%) primarily due to increasing rates of surgery on individuals 65 years of age and older at roughly double the rate for the younger population. The second reason for this increase was due to some long-stay frail elderly patients in acute care settings, known as the "bed blockers", waiting for placement in long term care facilities. Many (26%) of these individuals were prevented from being discharged because they required "cueing" with their ADL (Forbes, 1994a). Indeed, in British Columbia during 1985-86 these individuals accounted for 0.5% of all patients, yet they occupied up to one quarter of all the patient days provided in the province. Additionally, an even greater increase in both separation rates and lengths of stay occurred in extended care facilities. This put the total share of beds used by elderly people at nearly 60% of inpatient days, with individuals over 75 years receiving 40% of all patient days (Barer et al., 1995). Similar results were found in Manitoba (Roch, Evans, & Pascoe, 1985) and across Canada (Randhawa & Riley, 1995). Of the total increase in patient days between 1969 and 1985-86, about one-third were provided to patients with diagnoses of senile dementia, Alzheimer's disease, and other degenerations of the brain. However, the problems and outcomes appear to be the same: there is no evidence that these affected individuals have benefited as a result, although informal caregivers may have (Barer et al., 1995).

It is interesting to note that between the period of 1986/87 to 1994/95, the number of public hospitals in Canada fell by 14% and the number of approved beds in hospitals declined by 11%. As a result, the number of available beds per 1,000 population dropped from 6.6 to 4.1. In 1994/95, Quebec had the highest ratio of staffed beds per 1,000 population at 5.3 and Alberta the lowest at 3.1. The average length of stay in hospital also decreased from 9 days in 1986/87 to 7 days in 1994/95. In contrast, outpatient visits increased by 15%, primarily due to day- and night-care programs, surgical day care, and to general and special clinics (Tully & Saint-Pierre, 1997).

While the number of acute care beds has decreased, the rate of utilization of physician services has been rising for all age groups and especially for older adults, not because there were more of them but because they were serviced more intensely. Physician supply in Canada increased about 1.6% annually resulting in a potential "patient shortage" which has been avoided through more intensive servicing. The use of physicians' services by those over 74 years of age has increased 5.5% annually between 1974 to 1985. Individuals over the age of 65 account for about a quarter of the physician billings (Alberta Health, 1997; Barer et al., 1989). Ninety percent of older adults consulted with a physician in the previous year while only 10.5 % of the young-old and 16.5 % of the old-old consulted with a nurse (Elliot et al., 1996; Millar & Beaudet, 1996). Yet, the average morbidity of older adults remains about the same (Wagner, 1997). This provides evidence that medical services are not the only, or even the most important, influence on health (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996).

Most of the health problems experienced by older adults can be described as long-term, chronic conditions requiring multidimensional informal and formal support services such as home care and in some cases institutionalization. Home care is the single largest component of community-based services. Although the national data is very weak (Alexander, 1996), a recent overview of public home care programs in Canada revealed that home care policies, services, and their delivery vary across the country (Canadian Home Care Association, 1998). The responsibility of providing home care services rests with the provinces and territories as home care is not included in the *Canada Health Act*. The consequences have not been positive: absence of consistent standards in the development of programs and services and for regulating for-profit services; disparity in costs and access to the senior users; lack of coordination between the public, community, and private sectors; and difficulties encountered in meeting demands and controlling the quality of services. In some provinces seniors can receive a relatively integrated and effective range of home care services; in others, the services are inadequate and unlikely to meet the requirements of seniors (National Advisory Council on Aging, 1991).

The numbers of home support workers and services to seniors are growing rapidly. Indeed, home care service hours have more than tripled in the past six years in Alberta (Canadian Home Care Association, 1998). Eighty-five percent of the clientele is 65 years of age and older and 62% is over 75 years of age (National Advisory Council on Aging, 1994).

Research conducted in the United States has revealed that although there have been significant increases in home care utilization and program costs, few changes in health status have occurred (Rabiner, Mutran, & Stearns, 1995). In a synthesis of the literature on home care and community-based care, Applebaum, Christianson, Harrigan, and Shore (1988) found that in half of the studies clients reported improved contentment, morale, life quality, and psychological status following the initiation of care. In the other studies, no differences were reported between experimental and control group samples. However, there is a scarcity of Canadian studies on home care which is problematic as studies conducted in other countries are not necessarily applicable to the Canadian health care system (Health Services Utilization and Research Commission, 1996). Additionally, longitudinal studies have not been conducted to assess the long-term preventive effects which home care may have on client health status and ultimate utilization of other services (Chappell, 1994).

While it is recognized that older adults make greater use of health services than the younger populations, less is known about older adult's utilization of alternative health providers and services. Alternative services are usually described as those other than the general practitioner or specialist of Western medicine. These may include, but are not limited to, massage therapist, homeopaths, naturopaths and acupuncturists. While chiropractic services have been viewed as an alternative service in the past, they are increasingly being incorporated into the conventional health care system (Northcott & Bachynsky, 1993). Based on data from the 1994/95 NPHS, an estimated 15% of Canadians aged 15 and over used some form of alternative health care (includes

chiropractic services) in the year preceding the survey. This rate fell to about 10% for those 65 years of age and over (Millar, 1997). Other studies have reported higher rates of use of alternative therapies. Eisenberg and colleagues (1993) reported 34% of the adult population in the United States and MacLennan and colleagues (1996) estimated 20% of the adult population in Australia used at least one unconventional therapy in the previous year.

Women, middle-aged adults, and those with higher incomes, and more education tend to report more extensive use of alternative health services (Blais, Maiga, & Aboubacar, 1997; Eisenberg et al., 1993; Furnham & Foley, 1994; Millar, 1997; Thomas, Carr, Westlake, & Williams, 1991; Verhoef, Russell, & Love, 1994). However, Northcott and Bachynsky (1993) found evidence to suggest that persons who are less well-off financially are more likely to use alternative health care. Users of alternative services were found to be more critical and skeptical about the efficacy of modern medicine, held the view that treatment should concentrate on the whole person, preferred a greater sense of autonomy in dealing with their problems (Furnham & Foley, 1994; Murray & Shepherd, 1993), and made 40% fewer medical visits to physicians than non-users (Blais et al., 1997).

The 1994/95 NPHS data revealed that alternative services were primarily comprised of chiropractic services, with massage therapy making up 2%, homeopathy 2%, and acupuncture 1% of the practitioners. Marked regional differences were also reported. Only 5% of individuals in the Atlantic region consulted with alternative health care providers compared with 12% in Ontario, 14% in Quebec, and 21% in British Columbia and Prairie regions. These regional differences may reflect the variations in provincial funding as British Columbia, Alberta, Saskatchewan, Manitoba, and Ontario include at least some form of payment for chiropractic services under provincial health legislation.

The use of alternative health care was associated with the number of diagnosed chronic conditions. Twenty-six percent of those with three or more chronic conditions consulted alternative health care providers compared with 9% who were free of chronic diseases (Millar, 1997). Blais and colleagues (1997) also found that those who used alternative therapies had more chronic conditions but better overall health. The demand for alternative services may increase as the population ages and the prevalence of chronic conditions increases. Indeed, Verhoef and colleagues (1994) reported that 32% of Albertans used alternative practitioners in 1992 compared with 19% in 1990.

Dependent Variables

Health Status and Perceived Health

Currently, the measurement of health is dominated by data related to administrative information, such as the number of hospital beds, hospital days, and deaths. To fully evaluate the health of older Canadians, health problems related to vision,

hearing, speech, mobility, emotional state, thinking and memory, dexterity, and level of pain and discomfort need to be measured and examined over time (Roberge et al., 1995a). These aspects of health status are measured by instruments such as the Health Status Index (Torrance, Furlong, Feeney, & Boyle, 1995).

Global self-rated health is a subjective assessment by individuals of their health status. In 1994, 62% of Canadians aged 15 and over rated their health as excellent or very good, while only 11% reported fair or poor health. At 75 years of age and over, 36% described their health as excellent or very good (Statistics Canada, 1995a). Self-rated health has been shown to correlate well with other measures of health and appears to be a better predictor of future outcomes than a number of objective health measures. For example, studies conducted on older adults revealed that self-rated health predicted mortality within a two-year (Rakowski, Mor, & Hiris, 1991), a five-year followup period (Pijls, Feskens, & Kromhout, 1993), and eight-year period (Shahtahmasebi et al., 1992). Shye and colleagues (1995) found gender differences in self-perceived health. Among men, self-perceived health and objective health were unrelated and the objective health measure was a stronger predictor of mortality. Whereas, among women, the two measures were correlated and only self-perceived health significantly predicted mortality.

The explanatory variables for self-rated health in a large cohort of community-dwelling individuals aged 85 and over were examined based on data from the 1994 Canadian Study on Health and Aging (Ebly, Hogan, & Fung, 1996). The strongest explanatory variable for poor self-rated health was found to be the presence of a health barrier for desired activities (e.g., physical problems and emotional/mental difficulties), followed by number of health complaints, feeling tired, and number of functional limitations. An examination of the 1994/95 NPHS data revealed that physical referents (e.g., mobility, vision problems, hearing problems, and activity restrictions) were the best predictors of self-rated health. Additionally, psychological distress and social support were found to be more significant predictors of self-rated health among women (Segall, Chipperfield, Mahon, Bailis, & Dunn, 1997).

Older adults perceive themselves to be healthier than younger adults with similar problems (Ebly et al., 1996; Johnson & Wolinsky, 1993). This may relate to the elderly having decreased expectations or to the older respondents comparing their health to their peers who were considered to be worse off. The old-old also represent a biological elite group as individuals with greater impairment were presumably "removed" from the sample by either death or institutionalization. In 1995, 18% of Canadians aged 80 and over lived in long-term care institutions (Tully & Mohl, 1995). Women, those with higher levels of education, higher income, and living in Prince Edward Island, Newfoundland, and Alberta tend to evaluate their health more positively (Johnson & Wolinsky, 1993; Statistics Canada, 1995b). Older Blacks were found to perceive their health as poorer than their White counterparts even though they did not differ significantly in number of chronic conditions, overall health status, and ability to perform activities of daily living (Coward et al., 1997). Measuring health status by subjective and objective measures such

as the global self-assessment of health and functional abilities provide a more accurate rating of health status.

Satisfaction with Health Care

The results of an Alberta survey indicated that of those who received health services in the last 12 months, 86% rated the quality as excellent or good, 79% reported the quality of health care services in their community as excellent or good, and 75% found the services accessible throughout the province (Alberta Health, 1997). The 1994/95 NPHS revealed that only a small minority (4%) of Canadians reported that they had been unable to receive the health care they required during the past year. This proportion did not vary significantly by age, sex, income, or educational attainment (Millar & Beaudet, 1996). Although most Canadians appear satisfied with the health care system, a recent poll by Southam News-COMPAS revealed that two-thirds of Canadians believe the only way to protect the health care system is by giving the system more money which is counter to the dominant thinking among health economists and politicians (Kennedy, 1997).

Client satisfaction with health care received is a measure of patient outcomes and an indicator of quality of care (Albrecht et al., 1993; Donabedian, 1988; Forbes, 1996; Reeder & Chen, 1994). The majority of satisfaction research has been conducted in acute care settings in relation to treatment received (Perez Corral & Abraira, 1995), programs (Siders & Peterson, 1991), nursing care (Eriksen, 1988), and physician care (Blanchard, Labrecque, Ruckdeschel, & Blanchard, 1990), and in ambulatory care clinics (Hill, Bird, Hopkins, Lawton, & Wright, 1992). A paucity of satisfaction research exists which pertains to the community setting. The few studies that have been conducted in the community focused on evaluating particular practitioners (Chang, Uman, Linn, Ware, & Kane, 1984; Field, 1984; Kurata, Nogawa, Phillips, Hoffman, & Werblum, 1992; Rovers & Isenor, 1988; Tarlov et al., 1989), and public health programs (Gray, 1992; Laffrey, Renwanz-Boyle, Slagle, Guthmiller, & Carter, 1990; Rogers, Grower & Supina, 1992; Williams & Cooper, 1993). The research conducted in the home setting has focused on clients' satisfaction with a particular program (Albrecht et al., 1993; Forbes, 1996; Strandvik, Hjelte, Malmborg, & Widen, 1992) and with specific care providers (Alberta Health, 1989; Eustis & Fischer, 1991; Laferriere, 1993; Martin Matthews & Wakefield, 1992).

Additionally, a scarcity of satisfaction research exists from a national or provincial perspective. Notable exceptions are the NPHS and the recent analysis of the data from the Canadian Study on Health and Aging that identified potential predictors of informal caregivers' dissatisfaction with community long-term care services. The sample comprised caregivers of seniors with dementia. Some of the predictors of dissatisfaction with care received were found to be: impairment in seniors' daily living activities; the senior having disruptive behaviours; the senior having dementia; the senior having nine or more years of education; the caregiver not living with the senior; and the caregiver

being other than Canadian, British, Scottish, or Irish (Durand, Krueger, Chambers, Grek, & Charles, 1995).

Multiple dimensions of client satisfaction with home care have been identified. Laferriere (1993) reported four factors a) technical quality of care, b) communication, c) personal relationships between client and provider, and d) delivery of services. In a qualitative study, Forbes (1996) identified structural aspects of the home care agency (e.g., availability, consistency of care providers, and flexibility), attributes of the care provider and client, and the clients' relationships with the formal care providers as important dimensions from the clients' perspectives. Others (Reeder & Chin, 1994; Westra et al., 1995) found client satisfaction with home care to be a unidimensional concept related to supportive behaviours that promoted client health. Similar dimensions of patient satisfaction with medical care services and hospital care have been identified as well as dimensions related to the physical environment and finances (Hays, Nelson, Rubin, Ware, & Meterko, 1990; Ware, Davies-Avery, & Stewart, 1978).

Although many sociodemographic characteristics have been examined as determinants of satisfaction, few trends have been found. Hall and Doran (1990) performed a meta-analysis of 221 studies and concluded that greater satisfaction with medical care was significantly associated with increased age and less education and marginally associated with being married and higher social status. No overall relationship was found for ethnicity, gender, income, or family size. Positive correlations have been reported between client/patient satisfaction and size of support network (Carmel, 1985), perceived social support (Raatikainen, 1991; Rabiner, 1992), perceived health status (Carmel, 1985; Cleary, Edgman-Levitan, McMullen, & Delbanco, 1992; Raatikainen, 1991; Samuelsson, Ingvad, & Edebalk, 1992), and perceived life satisfaction (Olsen & Fylkesnes, 1991).

Satisfied clients are more likely to use the service, to cooperate with health care professionals by disclosing relevant information, to participate in their own care, and to adhere to preventive care practice guidelines (Newcomer, Preston, & Harrington, 1996; Petersen, 1989; Thomas & Penchansky, 1984; Weingarten et al., 1995; Weiss & Ramsey, 1989). Therefore, it is important to assess clients' satisfaction with care received, especially when major reforms are occurring within the Canadian health care system so that appropriate and effective services can be made available to community-dwelling older adults and their caregivers.

Summary

While the great majority of older adults are active, healthy contributors to society, there is a sharp increase in the likelihood of major health problems and loss of independence after the age of 80 (Moore & Rosenberg, 1997). With the Canadian population aging and with health care restructuring occurring across Canada, increasing numbers of old-old individuals will need to be supported and maintained within their communities. The brief overview of the present state of knowledge of the determinants of

Canadian community-dwelling older adults' health status and satisfaction with health care reveals that many factors appear to directly and indirectly affect health. Biographic characteristics, socioeconomic status, geographic location, immigrant status, SOC, mastery, self-esteem, informal social support, and use of health care services have been shown to be important factors. However, further research is needed to examine which factors are the best predictors of health and satisfaction with health care so that efforts can be made to strengthen individual, family, and community resources.

CHAPTER 3

Methods

A correlational design was used to examine and describe the relationships between sociodemographic indicators, psychosocial variables, health services utilization indicators, and health status and satisfaction with health care in the Canadian community-dwelling young-old and old-old. This design was chosen as it allows the relationships between the variables to be determined and identifies the variables that best predict health status and satisfaction within and between the two cohorts. Identification of variables associated with enhanced health status and satisfaction with health care will increase understanding of the determinants of health in older adults so that more appropriate and effective policies and services can be implemented.

A subsample from the Health Canada Supplement to the 1994/95 National Population Health Survey (NPHS) (Statistics Canada, 1996b) was used in the present research. Secondary analysis of existing databases, such as the NPHS, is an effective and economical means of conducting research (Seniors Independence Research Program Advisory Committee, 1996). The advantages of secondary analysis include: a) the promotion of the principles of open scientific inquiry; b) verification, refinement, or refutation of original findings; c) multiple perspectives that may result in new insights and answers to questions not previously addressed; d) reduction of respondent burden; and e) economical usage of limited human, material, and fiscal resources (AARN Nursing Research Committee, 1996; Estabrooks & Romyn, 1995). The NPHS represents extensive and comprehensive Canadian data that individual researchers would not have the resources to collect. Indeed, the Seniors Independence Research Program Advisory Committee (1996) recommended that "funding agencies should ensure that their peer review mechanisms recognize the value of research based on secondary analysis of existing data" (p.30).

The NPHS was designed to collect information related to the health of the Canadian population. The questionnaire included components on health status, use of health services, risk factors, and demographic and socioeconomic characteristics. The Health Canada Supplement Survey covers topics in relation to nutrition, smoking, injury, breast feeding, alcohol and drug consumption, sexual health, and health care services. The NPHS survey collected cross-sectional information and will continue to collect information from a core panel of individuals at two-year intervals for up to twenty years (Tambay & Catlin, 1995). Although longitudinal analysis of future panels is planned, the present research focuses solely on deriving estimates from the cross-sectional 1994/95 data.

Sample

The target population of the NPHS included household residents in all provinces excluding populations on Indian Reserves, Canadian Forces Bases, and some remote areas in Quebec and Ontario. To ensure a minimum of 1,200 households in each province, a well known allocation scheme was used that balances the reliability requirements at national and regional levels (Kish, 1988). Accordingly, the sample was allocated proportionally to $\sqrt{(0.804W_h^2 + 1/12^2)}$, where W_h is the 1991 Consensus proportion of households in provinces h, h=1,...,12. This process determined the base sample size for each province (Tambay & Catlin, 1995).

A multi-stage stratified sample design developed for the Labour Force Survey (LFS) was used. Each province was divided into three types of areas (Major Urban Centres, Urban Towns, and Rural Areas) from which separate geographic and/or socioeconomic strata were formed. In the first stage, homogenous strata were formed and independent samples of clusters were drawn from each stratum. In most strata six clusters, usually Census Enumeration Areas, were selected using a randomized probability-proportional-to-size (PPS) sampling scheme.

In the second stage, dwelling lists were prepared for each cluster and households were selected from the lists. The sample sizes were inflated as approximately 15% of the dwellings were expected to be vacant or out-of-scope. To correct for the differences between anticipated and obtained sample counts, sample stabilization was used. Excessive yields were corrected by dropping a portion of the originally selected units.

Focus groups and field tests were conducted during the developmental stages of the questionnaires. Collection operations of the NPHS were divided in four quarters (June, August, and November 1994, and March 1995). Data were collected through personal interviews, with some completed over the telephone, by LFS interviewers using the Computer Assisted Interviewing method (CAI). The CAI method ensured that the questions were designed so that the type of answer was specified, the minimum and maximum values were indicated, on-line edits, and how to handle a non-response were provided. Additionally, the questionnaire was programmed to be customized to the respondent, based on his/her responses at the time. Limited health-related information, including socioeconomic characteristics, health care utilization, restriction of activities, and chronic conditions was collected for all household members. Most information was collected from a single household member who was randomly selected to become the longitudinal panel respondent.

Persons coming from large households, typically parents and dependent children, had less chance of being chosen whereas persons living in small households, often single people and the elderly, were over represented in the panel selection. To increase the representation of parents and youths, a rejective approach was adopted. A portion of the sample was pre-identified for screening. After their member roster was completed, screened households that had no member under 25 years were dropped out of the survey.

The rejective method reduced the under representation of respondents from households with children by an estimated 37% and diminished by half the overrepresentation of households with no one under the age of 25. Sample sizes were further inflated by the number of households expected to be screened out by the rejective method. Four provinces increased their allotted sample size through buy-in of additional units (Tambay & Catlin, 1995).

Many strategies were put in place to reduce the number of non-responses. To decrease the number of no-contacts, interviewers attempted to make visits at various times of the day, talked to landlords and neighbours, and followed up the no-contacts in subsequent quarters. Refusals were followed up by other interviewers, senior interviewers, or project supervisors. Additionally, the questionnaires were available in seven languages. Proxy reporting was allowed for the selected respondent for reasons of illness or incapacity and accounted for 4% of the information collected. The household response rate at the Canada level was 88.7% (N = 26,429 households and 58,439 household members), the selected person response rate was 96.1% (n = 17,626) and the number of respondents in the Supplement represented a 90.6% response rate (n=13,400). The sample for the present research includes all of those aged 65 and over who responded to the Supplement survey (n = 2,412). This sample represents the core sample of respondents targeted for the longitudinal study and generalizes to approximately 3.3 million Canadians aged 65 and over (Statistics Canada & Health Canada, 1996b; Tambay & Catlin, 1995).

Data Indicators that Reflect Areas of Interest

Based on the objectives of the present research a variety of data indicators were selected from the NPHS Supplement (Appendix A). An overview of the variables, scales selected, and the psychometric properties of the scales are highlighted.

Sociodemographic Variables

The sociodemographic variables included age (AGEGRP), gender (SEX), marital status (MARSTATG), geographic location (PROVINCE), income adequacy (DVINC594), education (DVEDC294), and immigrant status (DVBORNG, DVIMMIG, & DVLANG94). Cohort differences were assessed using age ranges between 65 to 79 years and 80 years and over as two subpopulations of the elderly, the young-old and old-old, have been confirmed (Shats, Kozakov, & Kohn, 1995; Suzman, Willis, & Manton, 1992). Analysis of marital status contrasted those who were married, living common-law, or with a partner with those who were not. The province of residence of the respondent was also measured. It is important to note that data at the provincial level masks differences within a given province. In British Columbia, for example, people living in northern and rural communities have five years less life expectancy than those living in other parts of the province (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996). Income was assessed using the derived income adequacy score which was based on total household income from all sources in the past

12 months and the size of the household. The derived score for highest education obtained was used to assess education. Immigrant status was measured by three indicators: derived length of time in Canada since immigration, derived place of birth, and derived language in which the respondent is able to conduct a conversation. Depending on their responses to the previous questions, respondents were flagged either nonimmigrant or immigrant (IMMIG_FLG).

Sense of Coherence

The construct, sense of coherence (SOC) (DVSCI94) was measured by the Sense of Coherence Scale which denotes the extent to which individuals perceive events as comprehensible, manageable, and meaningful. Over 113 persons or teams in 20 countries have used the SOC scale as a central concept in their research. Data have been gathered from a variety of groups, including kibbutz members, Israeli retirees, American nurses, and New Zealand pain patients. Included in the NPHS was the shortened 13-item version of the scale developed by Antonovsky (1987). The design of the questionnaire was guided by Guttman's facet theory. Responses were given on a 7-point Likert scale with higher scores indicating a stronger SOC. The Cronbach's alpha measure of internal consistency of 16 studies using the SOC-13 ranged from .74 to .91, and the internal consistency of the scale in the NPHS was reported to be .83 (Antonovsky, 1993b; Hood et al., 1996). The relatively few test-retest correlations showed considerable stability. For example, Coe, Romeis, Tang, and Wolinsky (1990) reported test-retest correlations of .77 for the SOC-13 over 6 months in their study of elderly patients at veterans' medical centre clinics.

A number of studies have attempted to establish the validity of the SOC questionnaire. Rumbaut (1983) developed a separate instrument designed to measure the same construct and administered the two instruments to 336 undergraduates. The correlation between Rumbaut's scale and SOC-29 was .64, indicating a degree of concurrent validity (Zlotogorski, 1992). A much lower correlation of .39 was reported with the 40-item scale developed by Payne (1982) (Antonovsky, 1993b). Criterion validity has been examined by determining the relationship between the SOC scale and measures in four domains: a global orientation to oneself and one's environment; stressors; health, illness and wellbeing; and attitudes and behaviour. Most correlations were found to be statistically significant (Antonovsky, 1993b). Of interest are the correlations with internal locus of control (.44), self-esteem (.49 to .63), health status (.19 to .42), and available social support (.14). Studies that have conducted factor analyses on the SOC scale have reported that no separate meaningful factors can be identified and concluded that the questionnaire measures SOC as a global construct (Antonovsky, 1993b; Coe et al., 1990; Flannery & Flannery, 1990; Pottie, 1990). The SOC questionnaire appears to be a reliable and valid instrument for the assessment of level of SOC (Langius, Bjorvell, & Antonovsky, 1992; Zlotogorski, 1992).

Mastery

The NPHS included the Mastery index (DVMAS194) based on the work of Pearlin and Schooler (1978). This seven-item scale assessed the degree to which individuals feel they have control over forces affecting their lives. The scale has been widely used across cultures in health sciences research. Responses were given on a five-point Likert scale ranging from (0) strongly agree to (4) strongly disagree, with scores reversed on two items. Higher scores indicated superior mastery.

The Cronbach's alpha measure of internal consistency was found to range from .67 to .77 (Pearlin et al., 1981; Penninx et al., 1997a; Penninx et al., 1997b; Turner & Noh, 1988) and the test-retest correlations were reported to be .44 over 4 years (Pearlin et al., 1981). Confirmatory factor analyses were performed on the seven items of the scale and all factor loadings were significant (Marshall & Lang, 1990). However, Roberts and colleagues (1994) in their study with a sample of 153 individuals aged 85 years and older found the Pearlin Mastery Scale to have a Cronbach's alpha of .35. Principal components factor analysis revealed that the low reliability was due to multidimensionality. One factor, Perceived Ability to Perform, did not attenuate the adverse effects of strain while another factor, Perceived Control of Events, did. This finding suggests that mastery may not be unidimensional in the old-old group.

Self-Esteem

The Self-Esteem index (ESTEEM-Q1) included in the NPHS was based on a subset of items from the Rosenberg Self-Esteem scale (1979). The six-item scale reflected the amount of positive feelings an individual holds about him/herself and purports to measure a global, unidimensional construct. Responses were given on a five-point Likert scale ranging from (0) strongly disagree to (4) strongly agree, with scores reversed on one item. Higher scores indicated greater self-esteem.

The Rosenberg Self-Esteem scale has been extensively used with widely varying populations, and has been the focus of numerous psychometric evaluations (Gray-Little, Williams, & Hancock, 1997). Translations and validations of the Rosenberg Self-Esteem scale have been conducted in French (Vallieres & Vallerand, 1990), and Chinese (Cheng & Hamid, 1995). The Cronbach's alpha measure of internal consistency was found to range from a low of .72 for a sample of men 60 years of age and over (Ward, 1977) to a high of .91 for a sample of 153 elderly aged 85 years and older (Roberts, Dunkle, Haug, 1994). The following test-retest coefficients have been reported: .82 after a one-week period (Fleming & Courtney, 1984), .54 over a six-month period (Murrell, Meeks, & Walker, 1991), .50 on a one-year retest (McCarthy & Hoge, 1984), and .43 over a four-year period (Pearlin et al., 1981). High correlations with other self-esteem scales have been reported (Hagborg, 1993; Hagborg, 1996; O'Brien, 1985; Savin-Williams & Jaquish, 1981). The six items of the scale factored into one dimension in a factor analysis by Pearlin and Schooler (1978). However, much debate has occurred regarding the proper conceptualization and measurement of self-esteem (Demo, 1985). Recently, Gray-Little

and colleagues (1997) conducted an item response theory analysis of the ten-item Rosenberg Self-Esteem scale and concluded that although the items of the scale are not equally discriminating, they define a unidimensional construct and provide information across the self-esteem continuum. They suggest that the scale could be shortened without compromising the measurement of global self-esteem.

Informal Social Support

The NPHS included both subjective and objective indicators of social support. This was important as the subjective sense of social support has been shown to be a stronger predictor of the older adult's morale that the objective measure (Gottlieb, 1991). However, the NPHS Public Use Microdata Documentation did not cite the theoretical framework or research on which the indicators were based. According to Marie Beaudet (Senior Analyst, Statistics Canada, personal communication, September 17, 1997), internal reliability and test-retest validity were not relevant as the sources of support will change. The social support items had face validity and criterion-related validity. Construct validity had not been definitely established.

Three derived social support indicators were examined: a) Perceived Social Support Index (DVSSI194), b) Social Involvement Dimension (DVSSI294, and c) Average Frequency of Contact Index (DVSSI394). The Perceived Social Support Index was composed of four items which reflected whether respondents reported that they had someone with whom they could confide, they could count on, someone who could give them advice, and someone who made them feel loved. The Social Involvement Dimension was measured by two items which reflected the frequency of participation in associations or voluntary organizations and the frequency of attendance at religious services in the last year. The Average Frequency of Contact Index measured the average number of contacts in the past 12 months with family members and friends who were not part of the household and with neighbours. This score was calculated by dividing the total number of contacts by the respondent's netsize of social support. Higher scores on these indicators revealed greater perceived social support, greater social involvement, and more contacts respectively (Statistics Canada & Health Canada, 1996a). Additionally, the items that comprised the derived scores were examined in order to obtain a richer understanding of perceived support, social involvement, sources, and frequency of contact for the two cohorts.

Health Care Services Utilization

The utilization of health care services was measured for each respondent in the subsample using a variety of indicators. The indicators included: overnight hospitalization (UT_Q1), number of hospitalized nights in the past 12 months (UT_Q1A), consultations with any health professional in the past 12 months (DVHPCN94), number of consults with traditional health care providers, including chiropractor services (UT_Q2A-J), consultations with an alternative health care provider (UT_Q4), type of alternative provider (UT_Q5A-Oth), services received from home care

in the past 12 months (UT_Q9A, UTQ10_A-F), number of drugs taken in the last 2 days (DRG_Q2), use of other products such as ointments and herbs (DRG_Q4), and choice of health care provider (H_Q12-15).

Health Status

Although there is no gold standard for measuring health status, the NPHS provided a multiattribute descriptive measure, the Health Utility Index Mark 3 (DVHST94) and a global measure of self-perceived health, the Derived Health Description Index (DVGHI94). The Health Utility Index Mark 3 (HUI3) was based on the Comprehensive Health Status Measurement System (CHSMS) which was developed at the Centre for Health Economics and Policy Analysis, McMaster University (Feeny, Furlong, Boyle, & Torrance, 1995; Torrance, Furlong, Feeny, & Boyle, 1995). It provided a description of an individual's overall functional health based on eight attributes: vision, hearing, speech, mobility, dexterity (use of hands and fingers), cognition (memory and thinking), emotion (feelings), level of pain and discomfort. A single numerical value between 0 and 1 was provided for any possible combination of levels of the eight self-reported health attributes. Combined with preference weights it reflected societal preferences on severity of different health states (Roberge et al., 1995b).

The Health Utility Index appeared to capture the relevant attributes of health status (Feeny et al., 1995; Torrance et al., 1995). The reported reliability estimates were generally high (kappas > 0.500) except for two attributes, speech and dexterity, whose kappa estimates were more modest (0.137 and 0.347 respectively). The overall test-retest reliability was found to be 0.767 (intra-class correlation coefficient) which was considered to be in the midrange (Boyle, Furlong, Feeny, Torrance, & Hatcher, 1995). The HUI3 has been found to be positively correlated with the Karnofsky Performance Score (KPS) ($r = .457$), although this moderate correlation was primarily due to the strong correlations between the KPS and the single attribute scores for mobility ($r = .656$) and self-care ($r = .604$) (Whitton, Rhydderch, Furlong, Feeny, & Barr, 1997).

The Derived Health Description Index which consisted of the five-point Likert-type question, "How would you describe your health: excellent, very good, good, fair, or poor?" was a valuable measure of health status. Indeed, this measure of self-assessment of health has been shown to correlate well with measures of functional limitations, number and type of self-reported problems, chronic conditions, acute symptoms, and composite measures of health status (Davies & Ware, 1981; Ebly et al., 1996; Kriegsman, Penninx, van Eijik, Boeke, & Deeg, 1996; Linn & Linn, 1980). These correlations supported criterion-related validity.

Satisfaction with Health Care

Global measures of satisfaction with health care were measured by three indicators: satisfaction with health care in Canada (SHCS_Q12), satisfaction with health care in the respondent's province (SHCS_Q13), and satisfaction with the quality of

health care that the respondent personally received in the past 12 months (SHCS_Q14). These questions were ranked on a four-point Likert-type scale: excellent, good, fair, and poor. A limitation of such broad questions was that information about the specific dimensions of satisfaction was not captured. The respondent chose an evaluation score, yet information about the referent was lacking (Carr-Hill, 1992). However, the overall score reflected the degree of satisfaction. In order to obtain a greater understanding of the respondents' perspectives on the Canadian health care system, indicators that reflected their views on the strengths and weaknesses (SHCS_Q15 & SHCS_Q16) and the misuse in the system (SHCS_Q17A, SHCS_Q17B, & SHCS_Q18) were also included. Additionally, as availability of services has been shown to be an important dimension of satisfaction (Forbes, 1996; Olsen & Fylkesnes, 1991; Ware et al., 1978), two indicators reflecting this dimension were examined: health care or advice needed but not received (UT_Q6) and the reason care was not received (UT_Q7U).

Data Analyses

The planned data analyses entailed a multi-stage process consisting of data description, univariate, and multivariate analyses. Analyses were completed separately for the two age cohorts (65-79 and 80+ years) using SPSS® 7.5 for Windows™. The primary focus of the analyses was to examine and compare the relationship between SOC, mastery, self-esteem, informal support, and health services utilization and health status and satisfaction with health care for the two cohorts.

Throughout the data analysis, the NPHS Public Use Microdata Documentation guidelines that related to rounding of estimates, sample weighting for tabulation, and publication recommendations were followed (Statistics Canada & Health Canada, 1996b). If less than 30 subjects contributed to the calculation of an estimate, then the weighted estimate was not released. While the population estimates produced by weighing within the SPSS program were correct, the variances calculated were almost meaningless. Accordingly, for all of the analyses techniques, except the descriptive analysis, the weights on the records were rescaled so that the average weight was one (1). This was accomplished by using a weight which was equal to the original weight divided by the average of the original weights for the sampled units contributing to the estimator in question. As the unequal probabilities of selection were taken into account, the "beta" estimates had greater accuracy. Because the complex sample design was incorporated into the analyses, the accuracy of the statistical inferences was enhanced (Steinbach, 1992).

Data Description

Simple descriptive statistics (e.g., frequencies, percentages, range, mean, median, and standard deviation) of the population estimates were obtained for the relevant variables in the two cohorts. These included biographic variables, socioeconomic variables, province of residence, immigrant status, SOC, mastery, self-esteem, informal social support, health service utilization, health status, and satisfaction with health care

indicators. Differences between the two cohorts were tested using the chi-square analysis of contingency tables, Mann-Whitney U test, or one-way ANOVA. All statistical tests were two-tailed and used the more stringent alpha .01 rather than .05 because of the violation of homogeneity of variance (Tabachnick & Fidell, 1996).

Data Exploration

Initially the variables used in the inferential analyses were examined to identify the missing values. Generally, "not stated" and "not applicable" responses were recoded to be missing values, except where those responses had substantive meaning or the items were inappropriate for the respondents. The number and pattern of missing data were analyzed. Using listwise deletion, a method that discards incompletely recorded cases and analyzes only the complete cases, a maximum of 210 (10.5%) of rescaled weighted cases in the young-old group and 60 (14.8%) of the rescaled weighted cases in the old-old group were deleted from the analyses. Although this was the standard treatment of missing data in SPSS programs, serious biases could occur if the missing data were not randomly distributed.

Two methods that provided an indication of the distribution of the missing data included a) the number of missing data from any one variable (Hertel, 1976), and b) a more sophisticated approach that used the dummy coded missing data indicator to correlate with other variables (Cohen & Cohen, 1983). Hertel (1976) suggested that if 15% or more of the data are missing from any one variable, the data cannot be assumed to be missing randomly and if possible should be excluded from the analyses. Two variables were excluded as the "not applicable" responses were greater than 15%. The depression scale had a "not applicable" response of 94.9% in the young-old cohort and 97.7% in the old-old and the derived urban/rural area had a "not applicable" response of 38.5% for the young-old group and 37.3% for the old-old group. Urban and rural data were not released for Northern Interior British Columbia and Ontario. Instead, health region information was provided on the public use file for these areas (D. Dekoker, Technical Research Officer, NPHS, Statistics Canada, personal communication, September 17, 1997). The remaining variables with the most missing cases were derived income adequacy (5.4%), derived SOC (4.8%), derived mastery (3.3%), derived self-esteem scale (2.3%), derived social support index (1.7%), derived average frequency of contacts (1.6%), and derived social involvement score (1.5%) in the young-old group. Similarly, the percentage of missing cases in the old-old group were derived SOC (10.3%), derived mastery (5.5%), derived income adequacy (4.7%), derived self-esteem (3.2%), derived social support index (2.0%), derived average frequency of contacts (2.0%), and derived social involvement score (2.0%). The high rate of non-responses for the SOC scale in the old-old group occurred because some questions, including the SOC scale, were not asked and were coded as "not stated" in the interviews conducted by proxy (J. Bustros, Senior Analyst, NPHS, Health Statistics Division, personal communication, September 23, 1997).

Further examination of the missing data was conducted using the more sophisticated approach (Cohen & Cohen, 1983). Missing data indicators (0 = missing, 1 = data available) were established for each of the above independent variables with missing data. To determine if there were differences between the cases with and without missing data and the dependent variables (e.g., perceived health, health status, and satisfaction with national, provincial and personal health care received), t-tests for independent samples were computed. In the young-old group, significant differences were found between the cases with missing and without missing data: self-esteem on health status (t (2001) = 3.21, p = .001); perceived social support on health status (t (2001) = -2.72, p = .007); and frequency of social contacts on health status (t (2001) = -2.65, p = .008). The missing data in the remaining variables in the young-old group can be assumed to be randomly distributed. In the old-old group there were no significant differences between the cases with missing and without missing data, therefore all of the variables with missing data can be assumed to be randomly distributed in the old-old group.

The analyses were completed with the missing data removed using pairwise deletion in the bivariate analyses and listwise deletion in the multivariate analyses and then rerun with all of the missing data replaced with the linear trend for that point. Linear trend regressed the existing series on an index variable scaled 1 to *n*. Missing values were replaced with the predicted values (Norusis, 1994). Interpretation of the results took into consideration that some of the missing data in the young-old group may not be randomly distributed.

Data Relationships

The correlation analyses utilized pairwise deletion of missing data as well as replacing the missing data with the linear trend for that point. Pearson product moment correlations were used to determine the strength and association between the independent variables (e.g., gender, marital status, income adequacy, highest level of education, province of residence, immigrant status, SOC, mastery, self-esteem, perceived social support, social involvement, frequency of social contacts, hospitalization, use of home care services, consultations with any health care professional, and consultations with alternative health professionals) and the dependent variables (e.g., perceived health, health status, and satisfaction with the national and provincial health care systems, and with care personally received). Potential confounders were revealed by these analyses so that appropriate control was exercised in subsequent analyses. Variables which were marginally significant (e.g., $p<.2$) and theoretically appropriate were retained for inclusion in multivariate analyses.

For each cohort, the retained variables were entered into linear regression analyses using a hierarchical model. A hierarchical model was selected because this technique allows the researcher to control the order in which the independent variables are entered into the regression equation based on a theoretical model. As well, interactions were explored. Once again, comparisons of these results were made between

the two cohorts by determining the significance of the difference between the correlation coefficients using Fisher's z_r transformation (Cohen & Cohen, 1983).

Power Analysis

Nunnally (1978) suggested 30 subjects per independent variable to ensure adequate statistical power for the proposed analyses. With a maximum of 20 independent variables, 600 subjects were required. However, Cohen (1988) provided a more sophisticated formula:

$$N = \frac{\lambda(1 - R^2)}{R^2}$$

where N = total sample size
λ = effect size index
R^2 = desired effect

The effect size index (λ) as defined by Cohen (1988) was a function of power, number of independent variables (u), and degrees of freedom of the denominator of the F ratio (v) at a given alpha level. A Table of λ values of the F Test indicated that with alpha equal to .01, at a power of .80, with 20 independent variables, and v equal to infinity, λ equaled 28.2. A small effect size was chosen ($R^2 = 0.02$).

$$N = 28.2(1 - .02)/.02 = 1381.8$$

Since v = N - u - 1, implied that v = 1,382 - 20 - 1 = 1,361. However, v = infinity was used to obtain $\lambda = 28.2$. To obtain an "exact" N, λ for 1382 was obtained using the formula:

$$\lambda = \lambda_L - \frac{1/v_L - 1/v}{1/v_L - 1/v_U}(\lambda_L - \lambda_U)$$

Where v_L = lowered Table value between which v fell
v_U = upper Table value between which v fell
λ_L = lower λ value
λ_u = upper λ value

$$\lambda = 32.6 - \frac{1/120 - 1/1361}{1/120 - 1/0}(32.6 - 28.2) = 28.59$$

The "exact" N = 28.59 (1 - .02)/.02 = 1,401. This N was very close to the originally computed N (1,382). Therefore, 1,401 subjects were needed for this study, a number well below the available 2,412 cases.

Ethical Considerations

Ethical approval was obtained from the University of Alberta Faculty of Nursing Ethics Review Committee prior to initiating the research. Given that the present research conducted analyses on data that Statistics Canada had released to the public domain following certain procedures that guaranteed the anonymity of the respondents, ethical issues were not a concern.

CHAPTER 4

Findings

This chapter addresses the research objectives by initially describing and comparing the sociodemographic, psychosocial, and health care services utilization variables for the community-dwelling young-old (65-79 years) and old-old (80 years and over). The dependent variables, perceived health, health status, and satisfaction with the national and provincial health care systems and with health care personally received, are then described and compared for the two cohorts. Correlations between the predictor variables and the dependent variables are presented followed by the results of the regression analyses for the two groups.

Description of the Canadian Community-Dwelling Young-Old and Old-Old Cohorts

Sociodemographic Variables

Gender and Marital Status. The frequencies and percentages for gender and marital status for the young-old and old-old cohorts are presented in Table 2. Not surprisingly, the percentage of females was greater in the old-old cohort than in the young-old cohort. A chi-square analysis of contingency tables showed a significant relationship between group membership (young-old/old-old) and gender ($\chi^2 = 7.742$, $p = .005$). As well, the percentage of those widowed, divorced, or separated was greater in the old-old cohort than in the young-old cohort and the percentage of those married or having a partner was greater in the young-old cohort. Indeed, the groups were found to differ significantly on marital status ($\chi^2 = 95.167$, $p = .000$).

Table 2
Gender and Marital Status of Young-Old and Old-Old

	Young-Old (N=2,704,391)		Old-Old (N=546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
Gender				
Female	1,506.7	55.7%	345.6	63.2%
Male	1,197.7	44.3%	200.9	36.8%
Not Stated	--	--	--	--
Marital Status				
Widowed/Divorced/Separated	887.7	32.8%	312.1	57.1%
Married/Common-Law/Partner	1,688.3	62.4%	199.0	36.4%
Single	128.4	4.7%	35.5	6.5%
Not Stated	--	--	--	--

Education and Income Adequacy. The percentage of those with lower education and those in the lowest and lower-middle income brackets were greater in the old-old cohort than in the young-old cohort (Table 3). When the groups were compared using the Mann-Whitney U test, the cohorts were found to differ significantly on education (U=342941.5, p=.000) and income (U= 303683.5, p=.000).

Table 3
Highest Education, and Income Adequacy of Young-Old and Old-Old

	Young-Old (N=2,704,391)		Old-Old (N=546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
Derived Highest Level of Education Obtained				
No Schooling	28.1	1.0%	8.8	1.6%
Elementary	536.9	19.9%	159.9	29.3%
Some Secondary School	807.7	29.9%	143.1	26.2%
Secondary School Graduation	364.2	13.5%	69.9	12.8%
Some Trade School/ Community College/Other	381.2	14.1%	74.6	13.6%
Some University	70.9	2.6%	18.9	3.4%
Diploma/Certificate	274.6	10.2%	30.0	5.5%
Bachelor Degree (Includes LLB)	183.4	6.8%	32.0	5.9%
Master/Doctorate (Includes MD)	42.4	1.6%	9.4	1.7%
Not Stated	15.0	.6%	--	--
Derived Income Adequacy				
Lowest Income	129.8	4.8%	57.7	10.6%
Lower Middle Income	475.1	17.6%	138.4	25.3%
Middle Income	1,107.6	41.0%	195.4	35.8%
Upper Middle Income	671.6	24.8%	110.5	20.2%
Highest Income	175.2	6.5%	19.7	3.6%
Not Stated	145.0	5.4%	24.8	4.5%

Living Arrangement and Province of Residence. The percentage of those living alone was greater and the percentages of those living with spouse/partner and with spouse and children were less for the old-old cohort than the young-old cohort (Table 4). Chi-square tests revealed a significant difference between the groups on living arrangement (χ^2 = 111.720, p = .000) with a greater percentage of old-old living alone. Not surprisingly, the majority of older adults live in Quebec, Ontario, and British Columbia, the three largest populated provinces (Table 4). It is interesting to note that Saskatchewan has a slightly greater percentage of old-old than Alberta and Manitoba even though these provinces are more populated than Saskatchewan. The cohorts did not differ significantly on province of residence.

Table 4
Living Arrangement and Province of Residence of Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
Living Arrangement				
Living Alone	825.4	30.5%	271.1	49.6%
Living with Spouse/Partner	1,446.1	53.5%	184.4	33.7%
Single Parent Living With Child(ren)	87.0	3.2%	15.1	2.8%
Living With Others	15.2	.6%	12.7	2.3%
Living With Spouse/Partner & Child(ren)	167.8	6.2%	1.5	.3%
Other	159.8	5.9%	61.7	11.3%
Not Stated	3.1	.1%	--	--
Province				
Ontario	1,036.4	38.3%	201.2	36.8%
Quebec	682.9	25.3%	106.0	19.4%
British Columbia	336.5	12.4%	98.7	18.1%
Saskatchewan	103.2	3.8%	32.0	5.9%
Alberta	208.1	7.7%	31.7	5.8%
Manitoba	111.2	4.1%	30.9	5.7%
New Brunswick	72.0	2.7%	16.2	3.0%
Nova Scotia	97.2	3.6%	15.4	2.8%
Newfoundland	44.8	1.7%	10.4	1.9%
Prince Edward Island	12.1	.4%	4.1	.8%
Not Stated	--	--	--	--

Immigrant Status. Table 5 delineates the frequencies and percentages of place of birth, length of time in Canada, and language in which the respondent is able to conduct a conversation. Overall, 21.5% of the young-old group and 30.3% of the old-old group are immigrants to Canada. Significant differences were revealed between the groups on place of birth ($\chi^2 = 23.548$, $p = .000$) with a smaller percentage of old-old born in Canada; length of time in Canada ($U = 374966.5$, $p = .000$) with a greater percentage of the old-old living longer in Canada; and on language ($\chi^2 = 31.361$, $p = .000$) with a greater percentage of old-old speaking only English, and greater percentages of the young-old speaking only French or French and English.

Table 5
Immigrant Status of Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
Derived Place of Birth				
Canada	2,104.0	77.8%	377.4	69.1%
Europe/Australia	450.8	16.7%	124.6	22.8%
USA & Mexico	43.1	1.6%	23.7	4.3%
Asia	63.7	2.4%	13.1	2.4%
South America & Africa	35.3	1.3%	7.7	1.4%
Not Stated	7.4	.3%	--	--
Derived Length of Time in Canada				
0 to 4 Years	47.9	1.8%	3.4	.6%
5 to 9 Years	22.4	.8%	8.3	1.5%
10 Years or More	510.7	18.9%	153.9	28.2%
Born in Canada	2,115.6	78.2%	379.5	69.6%
Not Stated	7.7	.3%	--	--
Derived Language in Which Respondent is Able to Conduct a Conversation				
English Only	1,429.4	52.9%	364.0	66.6%
French Only	392.1	14.5%	46.1	8.4%
English & French Only	373.5	13.8%	42.0	7.7%
Other	509.3	18.8%	94.5	17.3%
Not Stated	--	--	--	--

In summary, the old-old cohort had a statistically significant greater percentage of: females; widowed, divorced, or separated individuals; those living alone; those in the lowest and lower-middle income brackets; those in lower education levels; and immigrants than the young-old cohort. The cohorts were not found to differ significantly on province of residence. These findings lend support to the belief that there are two distinct groups among the elderly, the young-old and the old-old. Any examination of the predictors of health status of older adults should take into consideration the important differences between these two cohorts.

Psychosocial Variables

Sense of Coherence, Mastery, and Self-Esteem. The ranges, means, medians, and standard deviations (SD) are reported for the young-old and old-old cohorts on Sense of Coherence (SOC), Mastery, and Self-Esteem scores in Table 6. The SOC and Mastery scores were very similar for the young-old and old-old cohorts. However, One-Way ANOVAs revealed significant differences between the groups for Self-Esteem F (1, 2350) = 9.356, p =.002 with the young-old reporting greater Self-Esteem than the old-old.

Table 6
Scores on Sense of Coherence, Mastery, and Self-Esteem Scales for Young-Old and Old-Old

	Young-Old (N = 2,704,391)				Old-Old (N = 546,576)			
	Range	Mean	Median	(SD)	Range	Mean	Median	(SD)
Sense of Coherence	7-78	63.48	66	(10.99)	26-78	63.92	66	(11.01)
Mastery Scale	2-28	19.02	19	(4.36)	4-28	18.62	19	(4.17)
Self-Esteem	1-24	20.11	20	(2.85)	9-24	19.63	19	(2.87)

Informal Support. The ranges, means, medians, and SDs are reported for the young-old and old-old cohorts on Perceived Social Support, Social Involvement, and Average Frequency of Contact scores in Table 7. One-Way ANOVAs revealed significant differences between the groups for Perceived Social Support $F(1, 2368) = 8.937$, $p = .003$ with the old-old reporting greater Perceived Social Support and greater Frequency of Contacts $F(1, 2369) = 6.616$, $p = .010$. No significant differences were found between the groups on their Social Involvement scores.

Table 7
Scores on Informal Social Support Scales for Young-Old and Old-Old

	Young-Old (N = 2,704,391)				Old-Old (N = 546,576)			
	Range	Mean	Median	(SD)	Range	Mean	Median	(SD)
Perceived Soc Sup	0-4	3.62	4	(.79)	0-4	3.74	4	(.67)
Social Involvement	0-8	3.45	4	(2.72)	0-8	3.30	4	(2.77)
Freq of Contacts	0-6	4.18	4	(.97)	1-6	4.32	4	(.97)

The subscales of the Perceived Social Support Scale (Table 8) revealed that the vast majority of both the young-old and old-old perceived that they had someone who could be trusted to assist them in the crisis, a confidant, and someone who loved them. A significantly higher percentage of old-old than young-old reported that they had someone who would be available in a crisis ($\chi^2 = 7.648$, $p = .006$), and someone with whom to discuss personal decisions ($\chi^2 = 6.983$, $p = .008$). The groups were not significantly different in their perception of having someone with whom to confide and in having someone who makes one feel loved and cared for.

Table 8
Subscales of Perceived Social Support of Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
Has Someone Who Can Be Counted On				
In a Crisis Situation	2,505.6	92.6%	524.2	95.9%
Not Stated	41.3	1.5%	9.5	1.7%
Has Someone With Whom to Discuss				
Personal Decisions	2,356.0	87.1%	499.2	91.3%
Not Stated	40.9	1.5%	9.5	1.7%
Has Someone With Whom to Confide	2,184.7	80.8%	463.5	84.8%
Not Stated	42.8	1.6%	9.5	1.7%
Has Someone Who Makes Him/Her				
Feel Loved and Cared For	2,583.1	95.5%	523.7	95.8%
Not Stated	42.3	1.6%	9.5	1.7%

Many (41.7%) of the young-old and 41.3% of the old-old belonged to a voluntary organization and the greatest percentages participated in these organizations at least once a week (20.1% and 16.5% respectively). Additionally, 38.1% of the young-old and 34.3% of the old-old attended religious services at least weekly. A chi-square test and Mann-Whitney tests revealed no significant differences between the groups on the individual items in the Derived Social Involvement Scale.

The average frequency of contact with close friends, neighbours, brothers or sisters, other relatives, daughters or daughters-in-law, and sons or sons-in-law for the young-old and old-old can be found in Table 9. Since few respondents had parents or grandparents, the frequencies of contact with these sources were not compared. The largest percentages of the young-old had weekly contact with close friends and daily contact with neighbours and the largest percentages of the old-old had daily contact with neighbours and with close friends. The difference between the groups on the frequency of contact with close friends was significant ($\chi^2 = 37.098$, $p = .000$). The difference was not significant with neighbours. These findings underscore the importance of friends and neighbours to this population and especially to the old-old.

A Chi-square test also revealed significant differences between the groups on the frequency of contact with brothers or sisters ($\chi^2 = 93.144$, $p = .000$). A greater percentage of respondents in the old-old cohort reported not having a brother or sister than did the respondents in the young-old cohort. The differences were not significant between the groups in the frequency of contact with other relatives, daughters or daughters-in-law, and sons or sons-in-law. However, as expected, a greater percentage of old-old reported having no close friends, daughters or daughters-in-law, and sons or sons-in-law than did the young-old cohort. The old-old are more likely to outlive their siblings, friends, and even children.

Table 9
Subscales of Average Frequency of Contact Scale for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
Contact With Close Friends (Neighbours)				
Do Not Have Any	194.2(117.5)	7.2(4.3)	61.3(13.0)	11.2(2.4)
Every Day	728.5(957.7)	26.9(35.4)	198.4(221.6)	36.3(40.5)
At Least Once a Week	1,138.9(808.7)	42.1(29.9)	163.0(135.1)	29.8(24.7)
2 or 3 Times a Month	268.2(214.3)	9.9(7.9)	49.9(52.1)	9.1(9.5)
Once a Month	138.7(144.0)	5.1(5.3)	24.0(18.2)	4.4(3.3)
A Few Times a Year	116.2(134.1)	4.3(5.0)	32.0(33.5)	5.9(6.1)
Once a Year	30.7(31.7)	1.1(1.2)	6.7(5.9)	1.2(1.1)
Never	46.5(253.8)	1.7(9.4)	1.8(57.7)	.3(10.6)
Not stated	42.6(42.6)	1.6(1.6)	9.5(9.5)	1.7(1.7)
Contact With Brothers or Sisters (Other Relatives)				
Do Not Have Any	332.5(371.7)	12.3(13.7)	163.7(77.9)	29.9(14.2)
Every Day	209.7(100.9)	7.8(3.7)	42.3(26.3)	7.7(4.8)
At Least Once a Week	584.4(403.8)	21.6(14.9)	109.5(94.6)	20.0(17.3)
2 or 3 Times a Month	296.3(273.0)	11.0(10.1)	38.5(51.0)	7.0(9.3)
Once a Month	398.2(390.1)	14.7(14.4)	55.0(59.9)	10.1(11.0)
A Few Times a Year	552.7(586.2)	20.4(21.7)	66.2(132.1)	12.1(24.2)
Once a Year	181.5(306.4)	6.7(11.3)	32.6(50.0)	6.0(9.1)
Never	104.2(227.5)	3.9(8.4)	29.5(45.4)	5.4(8.3)
Not Stated	44.9(44.9)	1.7(1.7)	9.5(9.5)	1.7(1.7)
Contact With Daughters (Sons) or Daughters-In-Law (Sons-In-Law)				
Do Not Have Any	413.0(453.3)	15.3(16.8)	122.8(124.2)	22.5(22.7)
Every Day	728.7(555.1)	26.9(20.5)	150.2(115.4)	27.5(21.1)
At Least Once a Week	994.4(1,029.4)	36.8(38.1)	179.1(194.3)	32.8(35.6)
2 or 3 Times a Month	243.6(279.5)	9.0(10.3)	39.9(42.9)	7.3(7.8)
Once a Month	128.5(169.4)	4.8(6.3)	21.2(25.2)	3.9(4.6)
A Few Times a Year	89.6(132.0)	3.3(4.9)	14.4(27.0)	2.6(4.9)
Once a Year	13.8(16.3)	.5(.6)	3.4(3.5)	.6(.6)
Never	47.3(24.1)	1.7(.9)	6.2(4.6)	1.1(.8)
Not Stated	45.5(45.5)	1.7(1.7)	9.5(9.5)	1.7(1.7)

In summary, SOC and Mastery scores were found to be similar for the young-old and old-old cohorts. A difference was found in relation to the Self-Esteem scores with the young-old reporting greater Self-Esteem than the old-old. However, the old-old cohort scored significantly higher than the young-old cohort in Perceived Social Support and specifically in their perception that support would be available in a crisis and when making personal decisions. The old-old cohort also scored significantly higher than the young-old cohort in Average Frequency of Contact, suggesting that the old-old have greater frequency of contact with a smaller informal support network than the young-old. A large percentage of both the young-old and old-old had daily contact with close friends, neighbours, daughters or daughters-in-law, and sons or sons-in-law. Surprisingly, the young-old and old-old cohorts did not differ significantly in their total Social Involvement scores and in the individual items of the scale.

Health Care Services Utilization

Hospitalization. In the past 12 months, 14.7% of the young-old and 22.4% of the old-old had been a patient overnight in hospital. The difference between the groups was significant ($\chi^2 = 14.735$, $p = .000$). Surprisingly, the average length of stay for the old-old (11.73 days, SD = 10.23) and young-old (10.89 days, SD = 9.65) was not significantly different. However, it should be noted that the average length of hospital stay for older adults is significantly higher than the average length of stay for all Canadians which in 1994/95 was 7 days (Tully & Saint-Pierre, 1997).

Home Care Services. A significantly greater percent of the old-old cohort (21.6%) received home care services than the young-old cohort (7.8%) ($\chi^2 = 71.730$, $p = .000$). The growth of home care use by the old-old was primarily related to receipt of personal care assistance ($\chi^2 = 19.081$, $p = .000$) (Table 10). Large percentages of both cohorts received homemaking services. A greater percentage of young-old than old-old received nursing care and fewer young-old than old-old received assistance with meal preparation, although these differences were not significant.

Table 10
Types of Home Care Services Received for Young-Old and Old-Old

	Young-Old (N = 210,464)		Old-Old (N = 118,021)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
Homemaking	125.0	59.4%	72.6	61.5%
Nursing Care	73.1	34.8%	28.1	23.8%
Personal Care	8.4	4.0%	25.0	21.2%
Meal Preparation	11.8	5.6%	17.6	14.9%
Shopping	1.1	.5%	.9	.7%
Other	21.6	10.3%	11.1	9.4%
Not Stated	4.1	1.9%	1.6	1.4%

Traditional Healthcare Professionals. Nearly all of the young-old (95.8%) and old-old (96.7%) had consulted with a healthcare professional in the previous year. Both groups consulted with their general practitioner most often (Table 11). However, the old-old consulted with a nurse $F(1,2409) = 36.250$, $p = .000$, eye specialist $F(1,2409) = 14.207$, $p = .000$, and social worker $F(1,2410) = 22.737$, $p = .000$ more frequently than did the young-old.

Table 11
Number of Consultations with Traditional Healthcare Professionals for Young-Old and Old-Old

	Young-Old (N = 2,699,324)			Old-Old (N = 543,968)		
	Range*	Mean	(SD)	Range*	Mean	(SD)
General Practitioner	0-31	4.80	(5.70)	0-31	5.59	(5.86)
Nurse	0-12	.43	(1.92)	0-12	1.13	(3.28)
Physical Therapist	0-31	.91	(4.17)	0-31	1.10	(4.32)
Eye Specialist	0-12	.76	(1.34)	0-12	1.03	(1.34)
Another Medical Doctor	0-12	.99	(2.13)	0-12	.76	(1.76)
Dentist/Orthodontist	0-12	.81	(1.38)	0-9	.70	(1.41)
Chiropractor	0-31	.74	(3.42)	0-31	.38	(2.40)
Social Worker	0-12	.005	(.61)	0-12	.23	(1.37)
Speech Therapist	0-12	.005	(.40)	0-9	.009	(.50)
Psychologist	0-12	.003	(.58)	0-11	.006	(.72)

Note. * More than 31 consultations were set to a value of 31.

Additionally, a One-Way ANOVA revealed a significant difference between the groups in the average number of medications taken in the last two days $F(1,2405) = 8.755$, $p = .003$. The young-old took an average of 2.2 ($SD = 2.0$) medications in the last two days while the old-old cohort took an average of 2.7 ($SD = 1.9$) medications.

Alternative Healthcare Professionals. Surprisingly few respondents reported consulting with alternative healthcare professionals (e.g., homeopaths, naturopaths, massage therapists, and acupuncturists) in the past 12 months. Only 2.7% of the young-old and 3.6% of the old-old replied in the affirmative. There were no significant differences between the groups in the kinds of consultations made. Both the young-old and old-old were seen by homeopaths, naturopaths, massage therapists, and acupuncturists. Additionally, the percentages of young-old (37.1%) and old-old (35.8%) who take health products such as ointments, vitamins, and herbs were not significantly different.

Choice of Setting and Provider. The respondents were asked: a) if they would go to a health care clinic, rather than a hospital or private doctor's office, for a routine examination; and if so, b) would they allow a nurse to give a routine physical examination; c) if they would go to a health care clinic rather than a hospital or private doctor's office to receive immunizations; and if so, d) would they allow a nurse, rather than a physician, to administer the immunization? Table 12 reports the frequencies and percentages of young-old and old-old who responded in the affirmative. Surprisingly, less than one-third of the respondents would attend a health care clinic for a routine examination and less than one-half would attend a health clinic to receive immunizations. Significant differences were found between the groups with a greater percentage of the young-old than the old-old cohort willing to attend a health care clinic for a physical examination ($\chi^2 = 16.208$, $p = .000$) and for immunizations ($\chi^2 = 18.487$,

p = .000). There were no significant differences between the groups in their willingness to allow a nurse to give a routine physical examination or immunizations.

Table 12
Choice of Setting and Provider for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
Health Care Clinic for Physical Exam	891.9	33.0%	125.1	22.9%
Not Stated	25.6	.9%	3.8	.7%
Allow Nurse to Give Physical Exam	557.4	60.8%	72.8	56.4%
Not Stated	28.2	3.1%	4.6	3.5%
Health Care Clinic for Immunizations	1,410.0	52.1%	222.5	40.7%
Not Stated	16.1	.6%	.8	.1%
Allow Nurse to Give Immunizations	1,351.9	94.8%	211.8	94.8%
Not Stated	17.9	1.3%	.8	.4%

In summary, approximately one-fifth of the old-old had been hospitalized overnight in the previous year, one-fifth of the old-old received home care services, and the vast majority of both cohorts had consulted with a health care professional in the previous year. These findings underscore that this population and especially the old-old are important consumers of health care services. Although a greater percentage of old-old than young-old were hospitalized overnight, the average length of stay between the groups was not significantly different. The majority of respondents in both cohorts required homemaking assistance through home care and a significantly greater percentage of the old-old received personal care assistance. Less than one-third of the respondents would attend a health care clinic for a routine examination and less than one-half would attend a health clinic to receive immunizations. Of those respondents who would attend a health clinic, a small majority would allow a nurse to give a routine examination. However, most would allow a nurse to administer immunizations.

Health Status and Perceived Health

A description of the dependent variables, namely health status, perceived health, and satisfaction with health care, follows. Health status was measured by a multiattribute descriptive scale, the Derived Health Status Index (Health Utility Index) and by a global measure of self-perceived health, the Derived Health Descriptive Index. The Health Utility Index scores revealed significant differences between the groups (F [1, 2407] = 55.706, p = .000). The young-old reported better overall health with a mean score of .84 (SD = .15) while the old-old reported a mean score of .78 (SD = .19). The frequencies and percentages of the eight attributes that comprise the Health Utility Index for the young-old and old-old can be found in Table 13.

Table 13
Subscales of the Health Utility Index for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f	%	*f*	%
Derived Cognition				
No cognitive problems	1,780.6	65.8%	303.9	55.6%
No memory problems	83.0	3.1%	26.3	4.8%
Somewhat forgetful	568.8	21.0%	120.3	22.0%
Difficulty thinking	220.0	8.1%	64.1	11.7%
Very forgetful/unable to remember	50.9	1.9%	32.0	5.9%
Not stated	1.1	.0%	--	--
Derived Dexterity				
No dexterity problems	2,648.0	97.9%	524.7	96.0%
Dexterity problems: no help	38.1	1.4%	14.2	2.6%
Dexterity problems: need help	17.2	.6%	7.6	1.4%
Not stated	1.1	.0%	--	--
Derived Emotion				
Happy & interested in life	2,049.2	75.8%	425.8	77.9%
Somewhat happy	579.8	21.4%	101.0	18.5%
Somewhat unhappy	53.8	2.0%	17.7	3.2%
Unhappy with a little interest in life	16.6	.6%	1.4	.3%
So unhappy that life is not worthwhile	4.6	.2%	.7	.1%
Not stated	.5	.0%	--	--
Derived Hearing				
No hearing problems	2,324.1	85.9%	361.3	66.1%
Problem hearing: corrected	239.0	8.8%	124.7	22.8%
Problem hearing: not corrected	130.4	4.8%	56.9	10.4%
Not stated	11.0	.4%	3.6	.7%
Derived Mobility				
No mobility problems	2,457.0	90.9%	386.9	70.8%
Mobility problems: no aid	53.0	2.0%	21.6	4.0%
Problems: mechanical support	141.5	5.2%	86.6	15.8%
Problems: cannot walk	51.8	1.9%	51.5	9.4%
Not stated	1.1	.0%	--	--
Derived Pain and Discomfort				
No pain or discomfort	1,889.4	69.9%	365.2	66.8%
Pain does not prevent activity	204.7	7.6%	26.9	4.9%
Pain prevents a few activities	309.1	11.4%	76.8	14.0%
Pain prevents some activities	156.2	5.8%	37.0	6.8%
Pain prevents most activities	145.1	5.4%	40.8	7.5%
Derived Speech				
No speech problems	2,661.6	98.4%	539.5	98.7%
Partially or not understood	39.0	1.4%	7.1	1.3%
Not stated	3.8	.1%	--	--
Derived Vision				
No visual problems	374.9	13.9%	59.2	10.8%
Problems corrected by lenses	2,180.3	80.6%	397.8	72.8%
Problem seeing distance: not corrected	68.7	2.5%	29.8	5.5%
Problem seeing close: not corrected	39.9	1.5%	14.9	2.7%
No sight	32.9	1.2%	44.6	8.2%
Not stated	7.7	.3%	.2	.0%

Mann-Whitney U tests revealed significant differences between the groups on derived cognition (U=355996.0, p=.000), derived hearing (U=316605.0, p=.000), derived mobility (U=316269.0, p=.000), and derived vision (U=344337.0, p=.000) with the old-old reporting greater problems. No significant differences between the groups were found for derived dexterity, derived emotion, derived pain and discomfort, and derived speech.

The frequencies and percentages of the young-old and old-old who rated their health as poor to excellent on the Derived Health Description Index can be found in Table 14. Interestingly, a Mann-Whitney test revealed no significant difference in how the young-old and old-old perceived their health.

Table 14
Derived Health Description Index for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
Poor	142.1	5.3%	33.9	6.2%
Fair	515.6	19.1%	119.9	21.9%
Good	922.0	34.1%	192.6	35.2%
Very Good	762.1	28.2%	138.3	25.3%
Excellent	362.5	13.4%	61.8	11.3%
Not Stated	--	--	--	--

In summary, most young-old and old-old reported no dexterity problems, that they were happy and interested in life or somewhat happy, no hearing problems or problems were corrected, no speech problems, and no visual problems or problems were corrected by lenses. These findings reveal that the vast majority of older adults have very good health within these attributes. Most young-old and a significantly fewer number of old-old reported no mobility problems. Both cohorts are more likely to report problems in the areas of cognitive, memory, and pain, and the old-old are also more likely to report mobility as a problem. However, most respondents reported their health to be good, very good, or excellent and 24.4% of the young-old and 28.1% of the old-old reported their health to be fair or poor.

Satisfaction with Health Care

The vast majority of young-old and old-old respondents rated health care in Canada, in their province of residence, and the care they personally received as either excellent or good (Table 15). However, the old-old reported significantly greater satisfaction and the young-old reported more dissatisfaction with their provincial health care system (U= 368691.5, p=.001).

Table 15
Satisfaction with National, Provincial, and Personally Received Health Care for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f	%	*f*	%
	(Numbers in thousands)			
National Health Care				
Poor	45.2	1.7%	9.4	1.7%
Fair	192.9	7.1%	28.3	5.2%
Good	1,302.7	48.2%	268.2	49.1%
Excellent	1,151.2	42.6%	233.4	42.7%
Not Stated	12.4	.5%	7.2	1.3%
Provincial Health Care				
Poor	58.2	2.2%	8.8	1.6%
Fair	269.9	10.0%	25.5	4.7%
Good	1,293.1	47.8%	255.8	46.8%
Excellent	1,075.8	39.8%	251.7	46.0%
Not Stated	7.5	.3%	4.8	.9%
Personally Received Health Care				
Poor	19.0	.7%	9.8	1.8%
Fair	87.9	3.2%	17.2	3.2%
Good	991.8	36.7%	191.6	35.0%
Excellent	1,348.2	49.9%	285.0	52.1%
Did Not Receive Any	257.1	9.5%	42.7	7.8%
Not Stated	.4	.0%	.3	.1%

The main strengths of Canada's health care systems for both the young-old and old-old groups were a) no cost, b) universality, c) quality of care, d) being free to choose their physician and location of treatment, and e) having access to the health care system

Table 16
Main Strengths of Canada's Health Care Systems for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
No Cost	1,483.8	54.9%	288.5	52.8%
Universality	1,392.6	51.5%	237.1	43.4%
Quality of Care	1035.8	38.3%	245.6	44.9%
Free to Choose Doctor & Location	1079.2	39.9%	190.7	34.9%
Access (Urban/Rural)	866.3	32.0%	163.6	29.9%
Range of Services	641.6	23.7%	130.8	23.9%
Portability	498.9	18.4%	74.0	13.5%
Other	105.5	3.9%	22.1	4.0%
None of the Above	59.0	2.2%	8.9	1.6%
Not Stated	43.7	1.6%	10.7	2.0%

(Table 16). A significantly greater percentage of the young-old identified universality (χ^2 = 9.436, p = .002) as a strength of the health care systems.

The groups did not differ significantly on the identified weaknesses of Canada's health care systems (Table 17). The most frequently reported weaknesses were misuse or abuse of the systems, too long between the call and appointment or visit, and cost of the health care systems. Although 9.1% of the young-old and 6.2 % of the old-old group considered lack of available services a main weakness, only 2.9% of the young-old and 3.8% of the old-old responded positively when asked if they had needed health care or advice but did not receive it. This finding supports the work of Millar and Beaudet (1996) who found that 4% of Canadians had been unable to receive the health care required during the previous year. In the present research, the primary reason most of the young-old (19.8%) and old-old (24.5%) gave for not receiving care was "difficulty getting access to the health professional".

Table 17
Main Weaknesses of Canada's Health Care Systems for Young-Old and Old-Old

	Young-Old (N = 2,704,391)		Old-Old (N = 546,576)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
Misuse/Abuse	1,447.5	53.5%	240.4	44.0%
Too Long Between Call & App't	650.1	24.0%	106.3	19.5%
Cost of System	435.2	16.1%	59.4	10.9%
Lack of Available Services	246.0	9.1%	34.1	6.2%
Quality of Care	152.9	5.7%	20.8	3.8%
Lack of Technology/Equipment/Tests	100.2	3.7%	10.0	1.8%
Other	307.1	11.4%	66.0	12.1%
None of the Above	479.9	17.7%	140.0	25.6%
Not Stated	42.4	1.6%	22.6	4.1%

Most young-old (86.0%) and old-old (81.7%) reported that there was misuse of Canada's health care systems. The greatest areas of misuse were the number of physician visits for minor ailments, the number of drugs prescribed, the number of diagnostic tests, and hospitalizations instead of using outpatient or home care services (Table 18). The groups did not differ significantly in their report of the areas in which there is misuse.

Table 18
Identified Areas in Which There is Misuse for Young-Old and Old-Old

	Young-Old (N = 2,372,114)		Old-Old (N = 480,245)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
No. of Physician Visits for Minor Ailments	1,845.7	77.8%	361.2	75.2%
No. of Drugs Prescribed	919.3	38.8%	170.2	35.4%
No. of Diagnostic Tests	398.6	16.8%	60.5	12.6%
Hospitalizations not Outpt. or Home Care	287.2	12.1%	40.2	8.4%
Length of Stay in Hospital	125.8	5.3%	14.1	2.9%
Other	377.2	15.9%	58.4	12.2%
Not Stated	65.2	2.7%	37.4	7.8%

Both groups considered individuals using the health care systems followed by governments and physicians to be responsible for reducing or stopping the misuse (Table 19). However, significantly more respondents in the young-old cohort than in the old-old group considered physicians ($\chi^2 = 6.962$, $p = .008$) responsible for reducing misuse.

Table 19
Who is Responsible for Reducing the Misuse for Young-Old and Old-Old

	Young-Old (N = 2,372,114)		Old-Old (N = 480,245)	
	f "Yes"	%	*f* "Yes"	%
	(Numbers in thousands)			
Individuals Using the System	1,231.7	51.9%	232.6	48.4%
Governments	1,158.2	48.8%	206.2	42.9%
Physicians	1,027.0	43.3%	159.1	33.1%
Medical Associations	379.6	16.0%	559.2	11.6%
Hospitals	307.2	12.9%	41.0	8.5%
Other	100.7	4.2%	11.2	2.3%
Not Stated	75.3	3.2%	47.8	10.0%

In summary, most older adults rated health care in Canada, in their province of residence, and the health care that they had personally received as either excellent or good. However, the old-old were significantly more satisfied with their provincial health care system than the young-old. The main strengths of Canada's health care systems for both the young-old and old-old groups were no cost, universality, quality of care, and free to choose a physician and the location. Misuse or abuse of Canada's health care systems was the main identified weakness with the number of physician visits for minor ailments the primary reason given for the misuse. Individuals using the systems, followed by governments, and physicians were considered to be responsible for reducing the misuse.

Bivariate Relationships Between the Independent and Dependent Variables

Pearson product moment correlations were computed to further explore the strength and direction of the relationships among and between the potential predictor variables (e.g., sociodemographic attributes, psychosocial characteristics, and use of health care services) and the dependent variables (e.g., health status, perceived health, and satisfaction with national, provincial, and personally received health care) for the young-old (Appendix B) and old-old (Appendix C). The analyses were done using pairwise deletion of missing data and repeated by replacing the missing data with the linear trend for that point. As the results of these computations were very similar, only the findings of the slightly less conservation approach, pairwise deletion of the missing data, are reported (Tabachnick & Fidell, 1996). A summary description of the significant relationships between the independent and dependent variables follows with significance set at the more stringent alpha level of .01.

In the young-old cohort, health status was significantly positively related to male gender, income adequacy, education, SOC, self-esteem, mastery, perceived social support, social involvement, and frequency of social contacts, and negatively related to hospitalization, use of home care services, and consultations with health care professionals. Similar to the young-old cohort, in the old-old group health status was positively correlated with SOC, self-esteem, mastery, and social involvement, and negatively related to hospitalization, and use of home care services. Additionally, health status was found to be positively related to being a nonimmigrant in the old-old.

In the young-old perceived health was positively correlated with income adequacy, education, living in British Columbia, SOC, self-esteem, mastery, social involvement, frequency of social contacts, and health status. Perceived health was found to be negatively correlated with hospitalization, use of home care services, and consultations with any health care professionals. Similar, but slightly fewer correlations, between the predictor variables and perceived health were found in the old-old. Perceived health was positively related to SOC, self-esteem, mastery, social involvement, frequency of social contacts, and health status, and negatively correlated with hospitalization and use of home care services.

The three satisfaction with health care variables were significantly correlated with each other in both cohorts. In the young-old, satisfaction with the national and provincial health care systems and with health care personally received was positively correlated with income adequacy, education, immigrant status, perceived social support, and living in Ontario and negatively related to living in Saskatchewan and Quebec. Satisfaction with the national and provincial health care systems was positively related to male gender, living in British Columbia, SOC, self-esteem, mastery, perceived health, and health status. Additionally, satisfaction with their provincial health care system was negatively correlated with hospitalization. Satisfaction with health care personally received was also related to being married or having a partner and positively correlated with consultations with any health care professional.

Fewer and different variables were correlated with satisfaction with health care in the old-old group. Satisfaction with the health care in Canada was positively correlated with being married or having a partner, self-esteem, and consultations with any health care professional. Satisfaction with the provincial health care system was correlated with consultations with any health care professional and negatively related to living in Saskatchewan. Satisfaction with care personally received was related to being married or having a partner and positively correlated with living in Ontario and consultations with any health care professional.

Overall, because the intercorrelations among the independent variables were all below .60, the variables may be considered to be empirically distinct dimensions (Duffy & MacDonald, 1990). Therefore, multicollinearity among the independent variables was not considered a major problem in further analyses.

Multivariate Relationships

Initially, several exploratory techniques were conducted to determine if the data met the assumptions of multivariate analysis. Normality, linearity, and homoscedasticity were assessed by viewing frequency histograms and stem-and-leaf plots and by examining scatter plots of standardized residuals with standardized predicted values, partial regression scatter plots, frequency histograms of the standardized residuals, expected normal probability plots, and detrended normal probability plots for the standardized residuals. Scores from the Derived Health Status Index, satisfaction with the national and provincial health care systems, and with care personally received were all negatively skewed. Derived Health Description Index scores (perceived health status) were normally distributed.

The residual plots and the lists of standardized residuals for individual cases were also examined for outlying cases. Outlying cases are defined "as those with standardized residuals in excess of $\pm$ 3.3" (Tabachnick & Fidell, 1996, p. 139). Regression analyses were computed with and without the outlying cases and the results compared. Outlying cases ranged from 51 (2.9%) in the regression analysis of satisfaction with care personally received in the young-old group to zero outliers in the regression analysis of perceived health in the old-old group. The removal of the outliers resulted in scatter plots that showed the residuals distributed more uniformly around a mean of zero. The results reported are for the regression analyses conducted with the outliers removed.

The regression analyses were run with missing data replaced with the linear trend for that point and the analyses were repeated using listwise deletion to remove the cases with missing data. This step was important as a small amount of data were missing in a nonrandom pattern. The findings of the regression analyses with missing data replaced and with missing data removed were found to be very similar. Only the findings with the missing data removed by listwise deletion are reported as this approach is not as conservative as replacing the missing data (Tabachnick & Fidell, 1996).

Hierarchical (sequential) regression analyses were employed to determine if SOC, mastery, self-esteem, and informal social support and then health services utilization improved prediction of health status, perceived health, and satisfaction with health care beyond that afforded by the sociodemographic indicators. Variables which were marginally significant (e.g., $p<.2$) in the correlational analyses and theoretically appropriate were retained for inclusion in multivariate analyses. For ease of interpretation, the zero order correlations between the independent variables and the dependent variable are reported in the Table which accompanies each regression analysis.

Regression Analyses for Variables Predicting Health Status in the Young-Old

In the young-old cohort, the Derived Health Status Index scores were regressed on gender, marital status, income adequacy, education, and two provinces of residences (British Columbia and Alberta) in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, perceived social support, social involvement, and frequency of social contacts. In the third model hospitalization, use of home care services, and consultations with health care professionals were included in the regression analysis (Table 20).

All three models revealed significant F changes with the first model accounting for 2.4% of the variance in the Derived Health Status Index scores (F_{change} [6,1765] = 7.145; $p = .000$), the second model accounting for an additional 19.0% of the variance (F_{change} [6,1759] = 70.730; $p = .000$), and the third model accounting for another 9.2% of the variance (F_{change} [3,1756] = 77.946; $p = .000$). The total variance accounted for was 30.6%. These findings provide strong evidence that the psychological and social support variables are important predictors of health status.

The individual variables within model three that significantly contributed to the prediction of the Derived Health Status Index scores were (the variance accounted for by each of these variables with the other variables held constant is indicated in parenthesis): gender (.34%), marital status (.40%), SOC (3.72%), mastery (4.88%), social involvement (.49%), hospitalization (.83%), and home care use (7.51%). Living in British Columbia, self-esteem, and average frequency of contacts approached significance.

Table 20

Zero Order Correlations Between Independent Variables and Derived Health Status Index Scores and Hierarchical Regression Analysis of Derived Health Status Index Scores on Sociodemographic, Psychosocial, and Health Service Utilization Variables for the Young-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		.780		64.880	.000
Gender		1.770E-02	.060	2.451	.014
Marital Status		-8.4E-03	-.028	-1.064	.288
Income Adequacy		1.521E-02	.099	3.656	.000
Education		3.320E-03	.069	2.712	.007
BC		1.059E-02	.024	1.008	.314
Alberta		-2.2E-03	-.004	-.163	.870
Model 2					
Constant		.377		12.539	.000
Gender		1.755E-02	.059	2.659	.008
Marital Status		-1.7E-02	-.055	-2.310	.021
Income Adequacy		9.491E-03	.062	2.515	.012
Education		9.084E-04	.019	.812	.417
BC		1.225E-02	.028	1.285	.199
Alberta		1.088E-03	.002	.090	.928
SOC		2.645E-03	.198	7.833	.000
Self-Esteem		4.095E-03	.080	3.345	.001
Mastery		8.130E-03	.241	8.972	.000
Social Support		-1.6E-03	-.009	-.386	.699
Soc Involvement		4.391E-03	.082	3.729	.000
Freq Contact		5.074E-03	.033	1.501	.134
Model 3					
Constant		.450		14.372	.000
Gender	.060**	1.704E-02	.058	2.745	.006
Marital Status	.030	-1.9E-02	-.063	-2.801	.005
Income Adequacy	.109**	5.862E-03	.038	1.646	.100
Education	.101**	1.165E-03	.024	1.108	.268
BC	.039	2.030E-02	.046	2.260	.024
Alberta	-.029	3.418E-03	.006	.300	.764
SOC	.329**	2.576E-03	.193	8.107	.000
Self-Esteem	.237**	2.875E-03	.056	2.484	.013
Mastery	.367**	7.456E-03	.221	8.732	.000
Social Support	.080**	1.675E-03	.009	.435	.664
Soc Involvement	.117**	3.740E-03	.070	3.374	.001
Freq Contact	.080**	6.434E-03	.042	2.018	.044
Hospitalization	-.165**	-3.8E-02	-.091	-4.421	.000
Home Care	-.288	-.146	-.274	-13.264	.000
Hlth Profess	-.058**	-1.9E-02	-.026	-1.289	.197

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .024$ for Model 1; $\Delta R^2 = .190$ for Model 2; $\Delta R^2 = .092$ for Model 3 (ps = .000).

Regression Analyses for Variables Predicting Health Status in the Old-Old

In the old-old, the Derived Health Status Index scores were regressed on gender, income adequacy, education, immigrant status, and one province of residence (e.g., Ontario) in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, perceived social support, and social involvement. In the third model hospitalization, use of home care services, and consultations with alternative health care professionals were added to the regression analysis (Table 21).

All three models revealed significant F changes with the first model accounting for 5.1% of the variance in the Derived Health Status Index scores (F_{change} [5,335] = 3.598; $p = .003$), the second model accounting for an additional 21.1% of the variance (F_{change} [5,330] = 18.916; $p = .000$), and the third model accounting for another 8.3% of the variance (F_{change} [3,327] = 13.848; $p = .000$). The total variance accounted for was 34.5%. Once again, the findings reveal the important contribution that the psychosocial variables have in predicting health status beyond that afforded by the sociodemographic indicators.

The individual variables within model three that significantly contributed to the prediction of the Derived Health Status Index scores were (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): income adequacy (1.61%), SOC (2.22%), mastery (3.42%), and use of home care services (6.66%). Self-esteem approached significance.

The significance of the difference between the correlation coefficients for the young-old and old-old cohorts was tested using a Fisher's z_r transformation (Cohen & Cohen, 1983). The difference was nonsignificant. Use of home care services, mastery, and SOC were the most important predictors in both groups.

Table 21

Zero Order Correlations Between Independent Variables and Derived Health Status Index Scores and Hierarchical Regression Analysis of Derived Health Status Index Scores on Sociodemographic, Psychological, Social Support, and Health Services Utilization Variables for the Old-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		.775		29.518	.000
Gender		2.735E-02	.076	1.391	.165
Income Adequacy		-7.7E-03	-.045	-.797	.426
Education		9.396E-03	.161	2.882	.004
Immigrant		-4.0E-02	-.105	-1.970	.050
Ontario		-2.6E-02	-.073	-1.357	.176
Model 2					
Constant		.209		2.591	.010
Gender		3.212E-02	.089	1.823	.069
Income Adequacy		-1.8E-02	-.108	-2.112	.035
Education		6.568E-03	.112	2.203	.028
Immigrant		-2.6E-02	-.067	-1.383	.168
Ontario		-1.4E-02	-.039	-.778	.437
SOC		2.476E-03	.159	2.628	.009
Self-Esteem		8.191E-03	.134	2.419	.016
Mastery		1.047E-02	.247	3.920	.000
Social Support		1.845E-02	.064	1.276	.203
Soc Involvement		3.491E-03	.057	1.158	.248
Model 3					
Constant		.352		4.410	.000
Gender	.093	2.292E-02	.064	1.360	.175
Income Adequacy	.073	-2.1E-02	-.127	-2.597	.010
Education	.126*	4.786E-03	.082	1.687	.092
Immigrant	-.163**	-2.4E-02	-.063	-1.372	.171
Ontario	-.085	-5.8E-03	-.016	-.345	.730
SOC	.378**	2.320E-03	.149	2.584	.010
Self-Esteem	.355**	8.020E-03	.131	2.499	.013
Mastery	.440**	7.844E-03	.185	3.052	.002
Social Support	.105*	9.581E-03	.033	.692	.489
Soc Involvement	.138**	3.057E-03	.050	1.070	.285
Hospitalization	-.269**	-3.8E-02	-.091	-1.801	.073
Home Care	-.364**	-.110	-.258	-5.146	.000
Altern Hlth Profess	.080	5.498E-02	.062	1.361	.174

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .051$, $p = .003$ for Model 1; $\Delta R^2 = .211$, $p = .000$ for Model 2; $\Delta R^2 = .083$, $p = .000$ for Model 3.

Regression Analyses for Variables Predicting Perceived Health in the Young-Old

In the young-old cohort, the Derived Health Description Index scores were regressed on income adequacy, education, marital status, six provinces of residences (British Columbia, Saskatchewan, Manitoba, Ontario, Quebec, and Nova Scotia), and health status in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, perceived social support, social involvement, and frequency of social contacts. In the third model hospitalization, use home care services, and consultations with health care professionals were added to the regression analysis (Table 22).

All three models revealed significant F changes with the first model accounting for 26.5% of the variance in the Derived Health Description Index scores (F_{change} [10,1783] = 64.407; p = .000), the second model accounting for an additional 2.8% of the variance (F_{change} [6,1777] = 11.795; p = .000), and the third model accounting for another 2.5% of the variance (F_{change} [3,1774] = 21.937; p = .000). The total variance accounted for was 31.8%. Health status made the greatest contribution in predicting perceived health and the variance accounted for by health status with the other variables held constant was 11.70%. Additional individual variables within model three that significantly contributed to the prediction of the scores were (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): income adequacy (.79%), education (.98%), SOC (.62%), self-esteem (.64%), hospitalization (1.59%), and consultations with health care professionals (.49%). Living in Saskatchewan, mastery, perceived social support, social involvement, and use of home care services approached significance.

Table 22
Zero Order Correlations Between Independent Variables and Derived Health Description Index Scores and Hierarchical Regression Analysis of the Derived Health Description Index Scores on Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Young-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		-.822		-5.634	.000
Income Adequacy		.113	.100	4.239	.000
Education		3.788E-02	.107	4.828	.000
Marital Status		-3.4E-02	-.015	-.701	.484
British Columbia		4.173E-02	.013	.476	.634
Saskatchewan		-.311	-.056	-2.438	.015
Manitoba		-.186	-.035	-1.514	.130
Ontario		-1.7E-02	-.008	-.243	.808
Quebec		-7.9E-02	-.032	-1.041	.298
Nova Scotia		-.231	-.039	-1.720	.086
Health Status		3.127	.454	22.158	.000
Model 2					
Constant		-1.632		-7.240	.000
Income Adequacy		.107	.095	4.063	.000
Education		3.382E-02	.095	4.332	.000
Marital Status		-5.5E-02	-.025	-1.138	.255
British Columbia		4.799E-02	.015	.551	.582
Saskatchewan		-.304	-.054	-2.422	.016
Manitoba		-.189	-.036	-1.564	.118
Ontario		-2.6E-02	-.012	-.362	.718
Quebec		-.117	-.048	-1.528	.127
Nova Scotia		-.242	-.041	-1.838	.066
Health Status		2.652	.385	17.407	.000
SOC		7.314E-03	.075	3.053	.002
Self-Esteem		3.344E-02	.089	3.844	.000
Mastery		1.404E-02	.057	2.204	.028
Social Support		-7.5E-02	-.056	-2.626	.009
Soc Involvement		1.636E-02	.042	1.997	.046
Freq of Contacts		1.888E-02	.017	.804	.421
Model 3					
Constant		-1.005		-4.088	.000
Income Adequacy	.190**	.101	.089	3.876	.000
Education	.190**	3.518E-02	.099	4.582	.000
Marital Status	.037	-5.6E-02	-.025	-1.168	.243
British Columbia	.059**	6.312E-02	.019	.736	.462
Saskatchewan	-.052*	-.309	-.055	-2.501	.012
Manitoba	-.043	-.201	-.038	-1.692	.091
Ontario	.044*	-2.6E-02	-.012	-.367	.714
Quebec	-.045*	-.121	-.049	-1.607	.108
Nova Scotia	-.041	-.239	-.040	-1.842	.066
Health Status	.477**	2.355	.342	14.967	.000
SOC	.272**	7.747E-03	.079	3.286	.001
Self-Esteem	.248**	3.018E-02	.080	3.516	.000

Mastery	.318**	1.474E-02	.060	2.351	.019
Social Support	.036	-6.3E-02	-.047	-2.249	.025
Soc Involvement	.101**	1.637E-02	.042	2.030	.043
Freq of Contacts	.064**	3.131E-02	.028	1.353	.176
Hospitalization	-.224**	-.390	-.126	-6.184	.000
Home Care	-.205**	-.199	-.051	-2.397	.017
Hlth Profess	-.101**	-.378	-.070	-3.500	.000

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .265$, $p = .000$ for Model 1; $\triangle R^2 = .028$, $p = .000$ for Model 2; $\triangle R^2 = .025$, $p = .000$ for Model 3.

Regression Analyses for Variables Predicting Perceived Health in the Old-Old

In the old-old cohort, the Derived Health Description Index scores were regressed on education, marital status, immigrant status, four provinces of residences (British Columbia, Ontario, Quebec, and Nova Scotia), and health status in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, social involvement, and frequency of social support contacts. In the third model hospitalization and use of home care services were added to the regression analysis (Table 23).

All three models revealed significant F changes with the first model accounting for 26.8% of the variance in the Derived Health Description Index scores (F_{change} [8,348 = 15.942; $p = .000$), the second model accounting for an additional 7.6% of the variance (F_{change} [5,343] = 7.966; $p = .000$), and the third model accounting for another 2.8% of the variance (F_{change} [2,341] = 7.473; $p = .000$). The total variance accounted for was 37.2%. Similar to the young-old cohort, health status made the greatest contribution in predicting perceived health and the variance accounted for by health status with the other variables held constant was 6.55% ($.256^2$). Additional individual variables within model three that significantly contributed to the prediction of the scores were (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): mastery (2.99%), frequency of social support contacts (1.54%), and hospitalization (2.76%). Immigrant status and self-esteem approached significance.

The significance of the difference between the correlation coefficients for the young-old and old-old cohorts was tested using a Fisher's z_r transformation (Cohen & Cohen, 1983). The difference did not prove significant. Health status was the strongest predictor of perceived health in both cohorts. In the young-old cohort the next strongest predictor was overnight hospitalization. In the old-old group, mastery, hospitalization, and frequency of social contacts made the next greatest contribution to accounting for the variance in the Derived Health Description Index scores.

Table 23

Zero Order Correlations Between Independent Variables and Derived Health Description Index Scores and Hierarchical Regression Analysis of the Derived Health Description Index Scores on Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Old-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		.144		.568	.570
Education		2.587E-02	.073	1.544	.123
Marital Status		-.209	-.096	-2.064	.040
Immigrant		-.287	-.123	-2.618	.009
British Columbia		.225	.086	1.489	.137
Ontario		-2.3E-02	-.011	-.181	.856
Quebec		.303	.107	1.939	.053
Nova Scotia		-.400	-.065	-1.340	.181
Health Status		2.517	.430	9.157	.000
Model 2					
Constant		-1.661		-3.862	.000
Education		1.441E-02	.041	.894	.372
Marital Status		-.166	-.076	-1.698	.090
Immigrant		-.234	-.100	-2.211	.028
British Columbia		.285	.109	1.956	.051
Ontario		1.896E-02	.009	.153	.879
Quebec		.291	.103	1.854	.065
Nova Scotia		-.274	-.044	-.957	.339
Health Status		1.821	.311	6.162	.000
SOC		2.378E-03	.025	.452	.652
Self-Esteem		3.628E-02	.098	1.837	.067
Mastery		4.412E-02	.174	2.927	.004
Soc Involvement		1.732E-02	.047	1.006	.315
Freq of Contacts		.135	.124	2.681	.008
Model 3					
Constant		-1.191		-2.689	.008
Education	.111*	1.211E-02	.034	.758	.449
Marital Status	-.076	-.170	-.078	-1.753	.080
Immigrant	-.124*	-.207	-.089	-1.981	.048
British Columbia	.078	.258	.098	1.779	.076
Ontario	-.106*	2.840E-02	.013	.233	.816
Quebec	.078	.205	.072	1.316	.189
Nova Scotia	-.090	-.234	-.038	-.832	.406
Health Status	.470**	1.499	.256	4.819	.000
SOC	.306**	2.476E-04	.003	.048	.962
Self-Esteem	.323**	3.849E-02	.103	1.979	.049
Mastery	.419**	4.388E-02	.173	2.948	.003
Soc Involvement	.164**	1.897E-02	.052	1.121	.263
Freq of Contacts	.194**	.135	.124	2.743	.006
Hospitalization	-.301**	-.417	-.166	-3.379	.001
Home Care	-.234**	-9.3E-02	-.036	-.711	.478

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .268$, $p = .000$ for Model 1; $\Delta R^2 = .076$, $p = .000$ for Model 2; $\Delta R^2 = .028$, $p = .001$ for Model 3.

Regression Analyses for Variables Predicting Satisfaction with Health Care in Canada in the Young-Old

In the young-old, satisfaction with health care in Canada was regressed on gender, income adequacy, education, immigrant status, seven provinces of residence (British Columbia, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, and Nova Scotia), and health status in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, perceived social support, and perceived health. In the third model hospitalization, consultations with health care professionals, and consultations with alternative health care professionals were added to the regression analysis (Table 24).

The first two models revealed significant F changes. The first model accounted for 14.7% of the variance in satisfaction with health care in Canada (F_{change} [12,1760] = 25.336; p = .000), the second model accounted for an additional 2.0% of the variance (F_{change} [5,1755] = 8.489; p = .000), and the third model only accounted for another .4% of the variance (F_{change} [3,1752] = 2.994; p = .030). The total variance accounted for was 17.1%. The independent variables within model three that significantly contributed to the prediction of satisfaction with health care in Canada were primarily sociodemographic variables (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): gender (.72%), education (1.39%), immigrant status (.42%), British Columbia (1.74%), Saskatchewan (.96%), and Ontario (3.10%). SOC was the only additional variable that contributed significantly towards the prediction of satisfaction with health care in Canada. The variance accounted for by SOC with the other variables held constant was .59%. Perceived social support and consultations with alternative health care professionals approached significance.

Table 24

Zero Order Correlations Between Independent Variables and Satisfaction with Health Care in Canada and Hierarchical Regression Analysis of Satisfaction with Health Care in Canada on Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Young-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		2.695		27.149	.000
Gender		.109	.082	3.684	.000
Income Adequacy		2.182E-02	.032	1.326	.185
Education		2.854E-02	.132	5.513	.000
Immigrant		.113	.070	3.071	.002
British Columbia		.252	.128	4.076	.000
Saskatchewan		-.363	-.108	-4.193	.000
Manitoba		4.525E-02	.014	.537	.591
Ontario		.240	.178	4.592	.000
Quebec		-.119	-.079	-2.162	.031
New Brunswick		8.237E-03	.002	.084	.933
Nova Scotia		1.684E-02	.005	.185	.854
Health Status		.343	.082	3.658	.000
Model 2					
Constant		2.132		14.693	.000
Gender		.114	.086	3.885	.000
Income Adequacy		1.289E-02	.019	.782	.434
Education		2.601E-02	.120	5.035	.000
Immigrant		.104	.065	2.838	.005
British Columbia		.253	.129	4.116	.000
Saskatchewan		-.350	-.103	-4.068	.000
Manitoba		5.995E-02	.018	.718	.473
Ontario		.235	.174	4.521	.000
Quebec		-9.8E-02	-.066	-1.770	.077
New Brunswick		-2.2E-03	-.001	-.023	.982
Nova Scotia		1.508E-02	.004	.167	.868
Health Status		4.683E-02	.011	.427	.669
SOC		4.588E-03	.076	2.880	.004
Self-Esteem		1.042E-02	.045	1.794	.073
Mastery		5.758E-03	.038	1.352	.177
Social Support		4.302E-02	.052	2.318	.021
Perceived Health		2.487E-02	.041	1.574	.116
Model 3					
Constant		2.040		12.764	.000
Gender	.090**	.112	.085	3.813	.000
Income Adequacy	.128**	1.339E-02	.019	.810	.418
Education	.180**	2.545E-02	.118	4.925	.000
Immigrant	.123**	.105	.065	2.874	.004
British Columbia	.100**	.259	.132	4.217	.000
Saskatchewan	-.130**	-.330	-.098	-3.832	.000
Manitoba	-.033	5.792E-02	.018	.695	.487
Ontario	.188**	.237	.176	4.567	.000
Quebec	-.179**	-9.3E-02	-.062	-1.680	.093

New Brunswick	-.029	3.551E-03	.001	.036	.971
Nova Scotia	-.033	2.063E-02	.006	.229	.819
Health Status	.131**	3.838E-02	.009	.349	.727
SOC	.184**	4.616E-03	.077	2.899	.004
Self-Esteem	.102**	9.629E-03	.042	1.656	.098
Mastery	.174**	5.487E-03	.036	1.286	.199
Social Support	.119**	4.232E-02	.052	2.273	.023
Perceived Health	.132**	2.666E-02	.044	1.663	.097
Hospitalization	.031	-2.4E-02	-.013	-.561	.575
Hlth Profess	-.051*	.127	.039	1.743	.082
Alternative Hlth Prof	-.055*	-.214	-.053	-2.386	.017

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.
$R^2 = .147$, $p = .000$ for Model 1; $\Delta R^2 = .020$, $p = .000$ for Model 2; $\Delta R^2 = .004$, $p = .030$ for Model 3.

Regression Analyses for Variables Predicting Satisfaction with Health Care in Canada in the Old-Old

In the old-old cohort, satisfaction with health care in Canada was regressed on marital status and residence in one of four provinces (Saskatchewan, Manitoba, Ontario, and New Brunswick) in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, social involvement, frequency of social contacts, and perceived health. In the third model home care services, consultations with health care professionals, and consultations with alternative health professionals were added to the regression analysis (Table 25).

All three models revealed significant F changes with the first model accounting for 4.5% of the variance in satisfaction with health care in Canada (F_{change} [5,344 = 3.259; $p = .007$), the second model explaining an additional 6.6% of the variance (F_{change} [6,338] = 4.188; $p = .000$), and the third model accounting for another 6.1% of the variance (F_{change} [3,335] = 8.191; $p = .000$). The total variance accounted for was 17.2%. Only three independent variables within model three significantly contributed to the prediction of the satisfaction with health care in Canada in the old-old cohort (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): marital status (3.17%), consultations with health care professionals (3.31%), and consultations with alternative health professionals (2.07%). However, self-esteem, perceived health, and use of home care services approached significance.

The significance of the difference between the correlation coefficients for the young-old and old-old cohorts was tested using a Fisher's z_r transformation (Cohen & Cohen, 1983). The difference did not prove significant. However, it is noteworthy that the independent variables contributing to the prediction of satisfaction with health care in Canada were different for the two groups. The significant predictors in the old-old group were marital status, consultations with health care professionals, and with alternative practitioners while the predictors in the young-old group were primarily sociodemographic variables and SOC.

Table 25

Zero Order Correlations Between Independent Variables and Satisfaction with Health Care in Canada and Hierarchical Regression Analysis of Satisfaction with Health Care in Canada on Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Old-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		3.321		60.898	.000
Marital Status		.197	.154	2.910	.004
Saskatchewan		-.240	-.094	-1.728	.085
Manitoba		-.180	-.060	-1.123	.262
Ontario		5.548E-02	.044	.794	.428
New Brunswick		-.282	-.078	-1.465	.144
Model 2					
Constant		2.147		7.682	.000
Marital Status		.223	.175	3.316	.001
Saskatchewan		-.242	-.095	-1.767	.078
Manitoba		-.178	-.060	-1.130	.259
Ontario		9.502E-02	.076	1.370	.172
New Brunswick		-.305	-.085	-1.612	.108
SOC		3.619E-03	.066	1.030	.304
Self-Esteem		3.192E-02	.147	2.394	.017
Mastery		-1.2E-02	-.083	-1.188	.236
Social Involvement		1.290E-02	.060	1.110	.268
Freq of Contacts		6.078E-02	.095	1.779	.076
Perceived Health		6.753E-02	.116	1.944	.053
Model 3					
Constant		1.427		4.438	.000
Marital Status	.131**	.226	.178	3.401	.001
Saskatchewan	-.098	-.226	-.089	-1.700	.090
Manitoba	-.067	-.173	-.058	-1.129	.260
Ontario	.099*	7.022E-02	.056	1.038	.300
New Brunswick	-.093	-.301	-.084	-1.637	.103
SOC	.119*	2.940E-03	.054	.862	.389
Self-Esteem	.160**	3.070E-02	.141	2.373	.018
Mastery	.103*	-7.3E-03	-.049	-.717	.474
Social Involvement	.092	9.189E-03	.043	.810	.418
Freq of Contacts	.087	5.761E-02	.090	1.731	.084
Perceived Health	.108*	8.639E-02	.148	2.517	.012
Home Care	.079	.164	.109	2.058	.040
Hlth Profess	.232**	.670	.182	3.565	.000
Alternative Hlth Prof	-.077	-.440	-.144	-2.850	.005

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .045$, $p = .007$ for Model 1; $\Delta R^2 = .066$, $p = .000$ for Model 2; $\Delta R^2 = .061$, $p = .000$ for Model 3.

Regression Analyses for Variables Predicting Satisfaction with Provincial Health Care in the Young-Old

Similar to the predictors of satisfaction with health care in Canada, satisfaction with provincial health care systems was regressed on gender, income adequacy, education, immigrant status, residence in one of six provinces (British Columbia, Saskatchewan, Manitoba, Ontario, Quebec, and Nova Scotia), and health status in the first model. In the second model the following independent variables were added: SOC, self-esteem, mastery, perceived social support, and perceived health. In the third model hospitalization, consultations with health care professionals, and consultations with alternative health care professionals were added to the regression analysis (Table 26).

The first two models revealed significant F changes. The first model accounted for 14.7% of the variance in satisfaction with provincial health care (F_{change} [11,1768 = 27.813; p = .000), the second model accounted for an additional 1.4% of the variance (F_{change} [5,1763] = 5.851; p = .000), and the third model only accounted for another .3% of the variance (F_{change} [3,1760] = 2.063; p = .103). The total variance accounted for was 16.4%.

The independent variables within model three that significantly contributed to the prediction of satisfaction with provincial health care were similar to the predictors of satisfaction with health care in Canada in the young-old. The significant variables were (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): education (.92%), immigrant status (.90%), British Columbia (1.35%), Saskatchewan (.96%), Ontario (4.41%), and health status (.46%). No other variables contributed significantly towards the prediction of satisfaction with provincial health care. Gender, mastery, and perceived social support approached significance.

Table 26

Zero Order Correlations Between Independent Variables and Satisfaction with Provincial Health Care and Hierarchical Regression Analysis of Satisfaction with Provincial Health Care on Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Young-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		2.407		23.096	.000
Gender		7.562E-02	.053	2.378	.018
Income Adequacy		1.162E-02	.016	.654	.513
Education		2.547E-02	.109	4.554	.000
Immigrant		.176	.101	4.443	.000
British Columbia		.245	.115	3.917	.000
Saskatchewan		-.389	-.106	-4.296	.000
Manitoba		5.427E-03	.002	.062	.950
Ontario		.311	.213	6.061	.000
Quebec		-4.81E-02	-.030	-.889	.374
Nova Scotia		3.026E-02	.008	.318	.751
Health Status		.604	.133	5.986	.000
Model 2					
Constant		2.011		12.789	.000
Gender		8.125-02	.057	2.553	.011
Income Adequacy		5.842E-04	.001	.033	.974
Education		2.273E-02	.097	4.059	.000
Immigrant		.164	.094	4.142	.000
British Columbia		.246	.115	3.954	.000
Saskatchewan		-.371	-.101	-4.117	.000
Manitoba		2.239E-02	.006	.257	.797
Ontario		.308	.211	6.034	.000
Quebec		-2.75E-02	-.017	-.499	.618
Nova Scotia		3.023E-02	.008	.319	.750
Health Status		.324	.071	2.733	.006
SOC		1.848E-03	.028	1.070	.285
Self-Esteem		5.884E-03	.024	.035	.350
Mastery		1.125E-02	.069	2.433	.015
Social Support		4.400E-02	.050	2.186	.029
Perceived Health		2.826E-02	.043	1.651	.099
Model 3					
Constant		1.939		11.254	.000
Gender	.084**	8.040E-02	.056	2.522	.012
Income Adequacy	.109**	-1.13E-04	.000	-.006	.995
Education	.162**	2.256E-02	.096	4.023	.000
Immigrant	.151**	.165	.095	4.172	.000
British Columbia	.074**	.248	.116	3.987	.000
Saskatchewan	-.148**	-.358	-.098	-3.961	.000
Manitoba	-.046*	1.886E-02	.005	.217	.828
Ontario	.205**	.307	.210	6.008	.000
Quebec	-.145**	-2.55E-02	-.016	-.463	.644
Nova Scotia	-.036	3.424E-02	.009	.362	.718
Health Status	.162**	.307	.068	2.582	.010

SOC	.150**	1.956E-03	.030	1.131	.258
Self-Esteem	.088**	4.837E-03	.020	.767	.443
Mastery	.169**	1.134E-02	.070	2.446	.015
Social Support	.114**	4.273E-02	.048	2.114	.035
Perceived Health	.138**	2.773E-02	.042	1.595	.111
Hospitalization	.051*	-5.86E-02	-.029	-1.274	.203
Hlth Profess	.046*	.124	.035	1.571	.116
Alternative Hlth Prof	-.046*	-.145	-.033	-1.486	.137

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.
$R^2 = .147$, $p = .000$ for Model 1; $\triangle R^2 = .014$, $p = .000$ for Model 2; $\triangle R^2 = .003$, $p = .103$ for Model 3.

Regression Analyses for Variables Predicting Satisfaction with Provincial Health Care in the Old-Old

In the old-old cohort, satisfaction with provincial health care was regressed on marital status, immigrant status, and residence in one of five provinces (Alberta, Saskatchewan, Ontario, Quebec, and New Brunswick) in the first model. In the second model the following independent variables were added: self-esteem, perceived social support, social involvement, frequency of social contacts, and perceived health. In the third model home care services, consultations with health care professionals, and consultations with alternative health professionals were added to the regression analysis (Table 27).

The first and third models revealed significant F changes. The first model accounted for 4.8% of the variance in satisfaction with provincial health care (F_{change} [7,376 = 2.730; $p = .009$), the second model only accounted for an additional 2.3% of the variance (F_{change} [5,371] = 1.853; $p = .102$), and the third model accounted for another 9.0% of the variance (F_{change} [3,368] = 13.227; $p = .000$). The total variance accounted for was 16.1%. Consultations with health care professionals was the only independent variable within model three that significantly contributed to the prediction of satisfaction with provincial health care in the old-old cohort. The variance accounted for by consultations with health care professionals with the other variables held constant was 6.35%. Immigrant status, living in Saskatchewan, perceived health, use of home care services, and consultations with alternative health professionals approached significance.

The significance of the difference between the correlation coefficients for the young-old and old-old cohorts was tested using a Fisher's z_r transformation (Cohen & Cohen, 1983). The difference did not prove significant. In the young-old cohort, similar to satisfaction with the national health care system, satisfaction with provincial health care systems was primarily related to sociodemographic variables and to health status. Whereas, in the old-old cohort, consultations with health care professionals was found to be the only significant predictor of satisfaction with provincial health care systems.

Table 27

Zero Order Correlations Between Independent Variables and Satisfaction with Provincial Health Care and Hierarchical Regression Analysis of Satisfaction with Provincial Health Care on the Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Old-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		3.312		49.556	.000
Marital Status		.131	.103	2.0320	.043
Immigrant		.105	.078	1.538	.125
Alberta		-.147	-.057	-1.058	.291
Saskatchewan		-.330	-.128	-2.398	.017
Ontario		7.793E-02	.062	1.022	.307
Quebec		8.337E-02	.040	.090	.491
New Brunswick		-.151	-.040	-.774	.439
Model 2					
Constant		2.698		8.752	.000
Marital Status		.141	.111	2.173	.030
Immigrant		.144	.107	2.089	.037
Alberta		-.150	-.058	-1.073	.284
Saskatchewan		-.343	-.133	-2.471	.014
Ontario		8.748E-02	.069	1.130	.259
Quebec		5.051E-02	.032	.530	.596
New Brunswick		-.150	-.040	-.770	.442
Self-Esteem		1.309E-02	.061	1.131	.259
Social Support		2.737E-02	.029	.558	.577
Social Involvement		1.304E-02	.059	1.120	.263
Freq of Contacts		2.244E-02	.035	.664	.507
Perceived Health		4.660E-02	.082	1.478	.140
Model 3					
Constant		1.862		5.659	.000
Marital Status	.106*	.118	.093	1.868	.063
Immigrant	.103*	.156	.116	2.366	.018
Alberta	-.094	-6.90E-02	-.026	-.511	.609
Saskatchewan	-.136**	-.329	-.128	-2.481	.014
Ontario	.073	5.832E-02	.046	.785	.433
Quebec	.075	2.408E-02	.015	.201	.794
New Brunswick	-.083	-.158	-.042	-.847	.398
Self-Esteem	.102*	1.513E-02	.071	1.369	.172
Social Support	.066	1.619E-02	.017	.346	.730
Social Involvement	.027	1.095E-02	.050	.981	.327
Freq of Contacts	.015	1.715E-02	.027	.531	.596
Perceived Health	.093	6.873E-02	.121	2.206	.028
Home Care	.076	.190	.126	2.498	.013
Hlth Profess	.252**	.841	.252	5.116	.000
Alternative Hlth Prof	-.082	-.400	-.125	-2.562	.011

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .048$, $p = .009$ for Model 1; $\Delta R^2 = .023$, $p = .102$ for Model 2; $\Delta R^2 = .090$, $p = .000$ for Model 3.

Regression Analyses for Variables Predicting Satisfaction with Health Care Personally Received in Young-Old

Similar to the predictors of satisfaction with the national and provincial health care systems, satisfaction with health care personally received was regressed on income adequacy, education, immigrant status, marital status, and residence in one of four provinces (Alberta, Saskatchewan, Ontario, and Quebec) in the first model. In the second model the following independent variables were added: SOC, mastery, perceived social support, and social involvement. In the third model hospitalization, use of home care services, and consultations with health care professionals were added to the regression analysis (Table 28).

The first and third models revealed significant F changes. The first model accounted for 8.7% of the variance in satisfaction with health care personally received (F_{change} [8,1738] = 20.702; p = .000), the second model only accounted for an additional .6% of the variance (F_{change} [4,1734] = 3.053; p = .016), and the third model accounted for another 19.1% of the variance (F_{change} [3,1731] = 154.504; p = .000). The total variance accounted for was 28.4%. The independent variable that made the greatest contributed to the prediction of satisfaction with health care personally received in model three was consultations with any health care professional. The variance accounted for by consultations with health care professionals with the other variables held constant was 18.58%. Additional variables that contributed to the prediction were (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): education (.83%), immigrant status (.31%), living in Ontario (2.53%) and use of home care services (.38%).

Table 28

Zero Order Correlations Between Independent Variables and Satisfaction with Health Care Personally Received and Hierarchical Regression Analysis of Satisfaction with Health Care Personally Received on the Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Young-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		2.661		26.920	.000
Income Adequacy		6.782E-02	.058	2.196	.028
Education		3.402E-02	.093	3.735	.000
Immigrant		.153	.056	2.372	.018
Marital Status		.126	.056	2.241	.025
Alberta		-8.5E-03	-.002	-.080	.936
Saskatchewan		-.279	-.049	-2.036	.042
Ontario		.394	.173	6.001	.000
Quebec		-.168	-.067	-2.359	.018
Model 2					
Constant		2.101		10.492	.000
Income Adequacy		6.270E-02	.054	2.014	.044
Education		3.178E-02	.087	3.469	.001
Immigrant		.150	.055	2.317	.021
Marital Status		.108	.048	1.907	.057
Alberta		-1.3E-02	-.003	-.124	.901
Saskatchewan		-.273	-.048	-1.999	.046
Ontario		.388	.170	5.911	.000
Quebec		-.136	-.054	-1.883	.060
SOC		2.540E-03	.025	.923	.356
Mastery		5.646E-03	.022	.815	.415
Social Support		8.506E-02	.062	2.605	.009
Social Involvement		5.146E-03	.013	.543	.587
Model 3					
Constant		-.271		-1.293	.196
Income Adequacy	.118**	5.216E-02	.045	1.878	.061
Education	.110**	3.317E-02	.091	4.071	.000
Immigrant	.071**	.153	.056	2.663	.008
Marital Status	.058**	9.360E-02	.041	1.856	.064
Alberta	-.030	3.104E-03	.001	.033	.974
Saskatchewan	-.058**	-.178	-.031	-1.461	.144
Ontario	.154**	.363	.159	6.220	.000
Quebec	-.095**	-.113	-.045	-1.751	.080
SOC	.054*	4.532E-03	.045	1.851	.064
Mastery	.048*	1.188E-02	.047	1.923	.055
Social Support	.095**	1.872E-02	.014	.641	.521
Social Involvement	.039	7.149E-04	.002	.085	.933
Hospitalization	-.098**	.120	.038	1.815	.070
Home Care	.056*	.252	.062	2.943	.003
Hlth Profess	.364**	2.472	.431	20.916	.000

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

$R^2 = .087$, $p = .000$ for Model 1; $\Delta R^2 = .006$, $p = .016$ for Model 2; $\Delta R^2 = .191$, $p = .000$ for Model 3.

Regression Analyses for Variables Predicting Satisfaction with Health Care Personally Received in Old-Old

In the old-old cohort, satisfaction with health care personally received was regressed on marital status, immigrant status, and residence in one of three provinces (Alberta, Saskatchewan, and Ontario) in the first model. There were no psychosocial indicators that were marginally significant. Therefore only two models were used. In the second model the following independent variables were added: use of home care services, consultations with health care professionals, and consultations with alternative health professionals (Table 29).

Both models revealed significant F changes. The first model accounted for 7.0% of the variance in satisfaction with health care personally received (F_{change} [5,395 = 5.997; p = .000) and the second model accounted for an additional 23.3% of the variance (F_{change} [3,392] = 43.672; p = .000). The total variance accounted for was 30.3%. As with the young-old cohort, consultations with any health care professional made the greatest contribution to the prediction of satisfaction with health care personally received in model two. The variance accounted for by consultations with health care professionals with the other variables held constant was 20.88%. Additional independent variables that significantly contributed to the prediction of the dependent variable were (the variance accounted for by each variable with the other variables held constant is indicated in parenthesis): living in Ontario (1.88%), use of home care services (1.19%), and consultations with alternative health professionals (1.72%). Marital status approached significance.

The significance of the difference between the correlation coefficients for the young-old and old-old cohorts was tested using a Fisher's z_r transformation (Cohen & Cohen, 1983). The difference did not prove significant. In both groups, consultations with health care professionals made the greatest contribution to the prediction of satisfaction with health care personally received. Additionally, living in Ontario and use of home care services were significant predictors in both groups. Consultations with alternative practitioners was a significant predictor in the old-old and education and immigrant status were significant predictors of satisfaction with care personally received in the young-old.

Table 29
Zero Order Correlations Between Independent Variables and Satisfaction with Health Care Personally Received and Hierarchical Regression Analysis of Satisfaction with Health Care Personally Received on Sociodemographic, Psychosocial, and Health Services Utilization Variables for the Old-Old Cohort

Variable	r	B	beta-weight	t	p value
Model 1					
Constant		2.968		31.935	.000
Marital Status		.352	.154	3.155	.002
Immigrant		.155	.065	1.335	.183
Alberta		-.315	-.067	-1.352	.177
Saskatchewan		-.341	-.072	-1.453	.147
Ontario		.377	.166	3.251	.001
Model 2					
Constant		.218		.814	.416
Marital Status	.129**	.244	.107	2.470	.014
Immigrant	.070	.177	.074	1.756	.080
Alberta	-.092	-5.8E-02	-.012	-.286	.775
Saskatchewan	-.086	-.332	-.070	-1.625	.105
Ontario	.174**	.313	.137	3.094	.002
Home Care	.122*	.292	.109	2.573	.010
Hlth Profess	.451**	2.848	.457	10.603	.000
Alternative Hlth Prof	-.098*	-.772	-.131	-3.097	.002

Note. *p < .05, two-tailed. **p < .01, two-tailed.
R^2 = .070, p = .000 for Model 1; ΔR^2 = .233, p = .000 for Model 2.

In summary, the most significant predictor of the Derived Health Status scores in both cohorts was use of home care services. As well, mastery and SOC were found to be stronger predictors of health status than the sociodemographic indicators in both cohorts. An unexpected finding was that income adequacy was significantly negatively related to the Derived Health Status Index scores in the old-old cohort. Those with lower income adequacy reported greater health status.

The strongest predictor of the Derived Health Description Index scores (perceived health) was health status in both cohorts. In the young-old cohort, the next strongest predictor was overnight hospitalization followed by education. In the old-old group, mastery, hospitalization, and frequency of social contacts made the next greatest contribution to accounting for the variance in the Derived Health Description Index scores.

The independent variables contributing to the prediction of satisfaction with the national health care systems in the young-old were primarily sociodemographic variables such as education and province of residence. Living in Ontario and British Columbia were positively related to satisfaction with health care in Canada while living in Saskatchewan was negatively correlated. However, in the old-old cohort, consultations with health care professionals and having a partner were positively related to satisfaction

with health care in Canada. Consultations with alternative health professionals was negatively related to satisfaction with the national care system in the old-old suggesting that those who utilize alternative services are less satisfied with health care.

Similar to the best predictors of satisfaction with the national health care system, the predictors of satisfaction with the provincial health care systems in the young-old cohort tended to be the sociodemographic indicators: province of residence (e.g., positively related to living in Ontario and British Columbia and negatively related to living in Saskatchewan), education, and immigrant status. Whereas, in the old-old cohort, consultations with health care professionals was the only significant predictor of satisfaction with the provincial health care systems.

In both the young-old and old-old cohorts, consultations with health care professionals was the strongest predictor of satisfaction with care personally received. These findings underscore the importance of the contact with health care professionals in predicting satisfaction with health care. Living in Ontario and use of home care services were also significantly related to satisfaction with health care personally received in both cohorts. In the old-old, consultations with alternative health professionals was negatively related to satisfaction with care personally received, once again suggesting that those who utilize alternative services are less satisfied with traditional health care services.

CHAPTER 5

Discussion of Findings

While it is recognized that the determinants of health include many sociodemographic, psychosocial, and health service utilization variables, a paucity of Canadian research exists that examines the influence of these factors in a comprehensive manner. With the Canadian population aging and with health care restructuring occurring across Canada, increasing numbers of old-old will need to be supported and maintained within their communities. The purpose of this study was to expand existing knowledge on the determinants of health for the Canadian community-dwelling young-old and old-old so that efforts can be made to strengthen individual, family, and community resources. An examination of the similarities and differences in the Canadian community-dwelling young-old and old-old is followed by a more indepth examination of the best predictors of health status and satisfaction with the national and provincial health care systems and with care personally received. Thereafter, the limitations of the study, suggestions for future research, and policy, program, and practice implications are presented.

Similarities and Differences in the Canadian Community-Dwelling Young-Old and Old-Old

Sociodemographic Determinants

The findings from the present research revealed important sociodemographic differences between the two cohorts. The old-old cohort had a statistically significant greater percentage of: females; widowed, divorced, or separated individuals; those living alone; those in the lowest and lower-middle income brackets; those with lower education; and immigrants than the young-old cohort. These findings support the design of this study and the research of others (Shats, Kozakov, & Kohn, 1995; Suzman, Willis, & Mantonn, 1992). Any examination of the predictors of health status of older adults should take into consideration that there are at least two distinct groups among the elderly.

Psychosocial Determinants

The similar SOC scores for the young-old and old-old cohorts lend support to Antonovsky's (1987) belief that SOC is stabilized by the end of adulthood. The Mastery scores for the young-old cohort were also found to be very similar to the old-old group's scores. Previous research has reported that older adults have been found to feel less in control than younger adults (Marshall, 1991; Mirowsky, 1995). This difference was not apparent between the young-old and old-old cohorts. The scores in the present research suggest that both the young-old and old-old have a moderate sense of mastery. However, a difference was found in relation to the Self-Esteem scores with the young-old reporting greater self-esteem than the old-old. Previous research has demonstrated that self-esteem

was greater among older adults than younger adults (Dietz, 1996) but an examination of the differences between the young-old and old-old has not been previously undertaken to the knowledge of the investigator.

SOC was found to be positively related to being married, income adequacy, level of education, mastery, self-esteem, and informal social support in the young-old cohort. Antonovsky (1993b) viewed these factors as *generalized resistance resources* that facilitate successful coping. Thus, young-old individuals who are married, have greater income, higher levels of education, increased sense of mastery, increased self-esteem, and greater informal social support are more likely to have a strong SOC and view the world as comprehensible, manageable, and meaningful. However, none of the sociodemographic variables were significantly related to SOC in the old-old group. Thus it appears that socioeconomic status becomes less important in influencing SOC when individuals reach 80 years of age or older.

The mastery scores for both the young-old and old-old cohorts suggest that older adults have a sense of mastery but do not score highly. Education was found to be positively related to mastery in both cohorts. These results lend support to the research conducted by Mirowsky (1995) who demonstrated that education plays an important role in enhancing a sense of control. As well, income adequacy and immigrant status were found to correlate with mastery in the young-old cohort. Higher levels of income enhance the resources and options available to young-old individuals which in turn promote their sense of mastery. While immigrant status most likely does not promote a sense of mastery, those with a high sense of mastery would be more likely to have completed the immigration process.

The only socioeconomic variable found to be correlated with self-esteem in the young-old group was education. This finding once again demonstrates the important relationship between education and the psychological factors.

The old-old cohort scored significantly higher on perceived social support than the young-old. The higher scores in the old-old cohort were related to a greater percentage of the old-old believing that they had someone to count on in a crisis and to discuss personal decisions. Perceiving that these types of support would be available when needed is especially important to the old-old as without this support they perhaps would not be able to manage.

Surprisingly, the young-old and old-old cohorts did not differ significantly in their total social involvement scores and in the individual items of the scale. Many of the young-old and old-old belonged to a voluntary organization and the greatest percentages participated in these organizations at least once a week. Additionally, approximately one-third of older adults attended religious services at least weekly.

The old-old cohort had a significantly greater frequency of contact with their informal social support network than the young-old. Although it has been shown that

with increasing age there is a decline in network size (Dykstra, 1995; Glass et al., 1997; Morgan, 1988), the present research suggests that the old-old have greater frequency of contact with a smaller informal support network than the young-old. Both the young-old and old-old had the greatest percentage of daily contact with neighbours, followed by close friends, daughters or daughters-in-law, and sons or sons-in-law. These findings underscore the importance of neighbours and friends to older adults and the commitment adult children have to their elderly parents.

Based on data from the 1990 General Social Survey, Elliot and colleagues (1996) reported less daily contact of older Canadians with a close friend (11%) and with a child (13%). However, the present research found that 26.9% of the young-old and 36.3% of the old-old had daily contact with a close friend and 23.7% of the young-old and 24.3% of the old-old had daily contact with a child or in-law. The findings in the present research are perhaps an reflection that older adults are having to rely more on their informal support network than was the case even just a few years ago.

In the young-old cohort, being female was related to the three indicators of social support and in the old-old cohort being female was correlated with the average frequency of social contact. These findings lend support to previous research in this area (Dykstra, 1995; Shye et al., 1995) that revealed that women have larger informal social networks than men and siblings, other kin, and friends are more prominent in women's than men's networks.

In the young-old cohort, income adequacy and education were positively related to perceived support and social involvement. These findings support the work of Krause and Borawski-Clark (1995) who reported that older adults in upper income and educational categories were more likely to be satisfied with their informal support and have more contact with their friends. However, a surprising finding was evident in the old-old cohort. Education was found to be negatively related to perceived support. Old-old individuals with lower education perceived their informal support to be greater. This finding requires further investigation. One possible interpretation is that those with lower education may perceive greater support from friends and neighbors rather than from family, while those with higher levels of education may hesitate to seek support from friends and neighbors but rely more on family and hired help which may not be as available.

Marital status was significantly related to perceived support in the young-old cohort, but not significantly related to the other indicators of social support. This finding contradicts previous research that found that older adults living with a partner have higher rates of social participation and larger social networks (Knipscheer & Dykstra, 1995). The present research suggests that marital status is less important in promoting social support among older adults, rather relatives and friends appear to assume a greater importance.

Immigrant status was positively correlated with perceived social support while nonimmigrant status was found to be associated with social involvement and frequency of social contact in the young-old cohort. In the old-old cohort nonimmigrant status was also found to correlate with social involvement. These findings suggest that immigrants appreciate the support available to them yet their social networks and contacts with others are significantly less than nonimmigrants.

In the young-old cohort, SOC was related to all three social support indicators. Mastery was correlated with perceived social support and frequency of social contact and self-esteem was related to perceived social support and social involvement. In the old-old cohort, SOC was positively related to perceived social support and frequency of social contact. Self-esteem and mastery were correlated with social involvement. The present research supports the hypothesis that older adults with higher levels of SOC, mastery, and self-esteem have greater informal social supports and contradicts Ross and Mirowsky's (1989) findings that suggested that control and support can substitute for one another.

Health Care Services Utilization

Although a greater percentage of old-old than young-old were hospitalized overnight, the average length of stay of the two groups was not found to be significantly different. As well, a significantly greater percentage of the old-old received home care services, specifically personal care assistance. However, the greatest percentage of respondents in both cohorts required homemaking assistance. Most young-old (95.8%) and old-old (96.7%) had consulted with a health care professional in the previous year. Based on data from the 1991 General Social Survey, Elliot and colleagues (1996) reported slightly lower percentages of consultations with a medical doctor in the previous year, 89.5% in the young-old and 92% in the old-old. In the present study, the percentage of consultations with alternative health care professionals was surprisingly low. Higher rates have been reported (Eisenberg et al., 1993; MacLennan et al., 1996; Millar, 1997), however these studies have included use of chiropractic services as an alternative service.

Overnight hospitalizations were negatively related to mastery and self-esteem in the young-old cohort and negatively correlated with SOC and mastery in the old-old cohort. These findings lend support to the work of others (Butler et al., 1994; Mui & Burnette, 1994) who reported that lower self-esteem and decreased locus of control were predictors of health service use. None of the other sociodemographic variables which have been cited in previous research, such as gender (Millar & Beaudet, 1996), income (Kemper, 1992), education (Kempen & Suurmeijer, 1991), and living arrangement (McCallum et al., 1996; Moore & Rosenberg, 1997), were found to be related to overnight hospitalizations in the present research. The present findings underscore the importance of the relationship between the psychological factors and overnight hospitalizations in older adults although the nature of the relationship is unknown.

A greater number of factors were correlated with use of home care services in the present research. In the young-old cohort, use of home care services was negatively

related to income, SOC, mastery, and self-esteem and positively related to being single, and not surprisingly hospitalizations. Interestingly, living in British Columbia was positively related to use of home care which is perhaps a reflection of the greater availability of home care services in British Columbia (Sorochan, 1995). In the old-old cohort, education and mastery were found to be negatively correlated and hospitalizations positively correlated with use of home care services. Again the importance of the psychological factors is apparent. The findings lend support to the work by Solomon and colleagues (1993) who reported that lower education and living alone predicted the use of home care. However, in relation to income, previous research by Kemper (1992) reported that use of formal care increased with higher levels of income. Perhaps Kemper's findings are a reflection of the health care funding and payment systems in the United States which differ from the publicly funded health care system in Canada.

While use of home care was found to be negatively correlated with income in the young-old, consultations with any health care professional was found to be positively related to income in the old-old, which is congruent with Kemper's (1992) findings. As well, perceived social support in the young-old and being married or having a partner in the old-old were positively related to consultations with any health care professional. These findings lend support to the work of Chappell (1987) and Wan (1987) who reported that social support is positively associated with the use of formal services. Interestingly, living in Alberta was found to be negatively associated with consultations with health care professionals. Perhaps this finding is a reflection of the health care cutbacks occurring in this province at the time of the survey (Alberta Health, 1996; Tully & Saint-Pierre, 1997).

Use of alternative health professionals was found to be positively correlated with being female and negatively related to mastery in the young-old cohort. Others (Millar, 1997; Northcott & Bachynsky, 1993; Verhoef et al., 1994) have reported similar findings regarding women's use of alternative health professional but the findings regarding mastery are contrary to the findings reported by Furnham and Forey (1994). They claimed that individuals who consulted with alternative practitioners had a greater degree of control and believed that something could always be done for their illness. Additionally, young-old individuals living in Saskatchewan and old-old residents of British Columbia were more likely to use alternative health care.

Health Status and Perceived Health

A description of the dependent variables follows. The young-old reported significantly better overall health than the old-old with the young-old reporting greater abilities in the areas of cognition, hearing, mobility, and vision. The findings revealed that the vast majority of older adults have very good health within the attributes of dexterity, interest in life, hearing, speech, and vision. Both cohorts are more likely to report problems in the areas of cognitive, memory, and pain, and the old-old are also more likely to report mobility as a problem.

Although most young-old (75.7%) and old-old (71.7%) respondents reported their health to be good to excellent, 24.4% of the young-old and 28.1% of the old-old reported their health to be fair or poor. In comparison, 11% of Canadians aged of 15 and over had reported their health to be fair or poor (Statistics Canada, 1995b).

A discussion of the factors significantly correlated with the dependent variables would be premature as further multivariate analyses were conducted. The significant relationships and contribution of the independent variables to the prediction of the dependent variables can be found in a following section, Best Predictors.

Satisfaction with Health Care

Most older adults rated health care in Canada, in their province of residence, and the health care they had personally received as either excellent or good. However, the old-old (92.8%) were significantly more satisfied with their provincial health care system than the young-old (87.6%). These findings are similar to other provincial satisfaction surveys. Results of a survey released in June 1996 indicated that 85% of Albertans who personally received health services in the previous 12 months reported that the quality of care was excellent or good (Alberta Health, 1997).

It was interesting to note that the main strengths of Canada's health care system identified by the respondents reflected the conditions of the Canada Health Act. Indeed, the majority of respondents considered no cost or *public administration* to be the most important strength. *Universality* (available to rich and poor), *accessibility* (urban/rural and free to choose their physician and location of treatment), *comprehensibility* (range of services) and *portability* were considered important strengths. An additional identified strength was quality of care. These findings underscore that the conditions of the Canada Health Act are important to older adults.

Misuse or abuse of Canada's health care system was the major identified weakness. The primary identified areas of misuse were the number of physician visits for minor ailments, the number of drugs prescribed, the number of diagnostic tests, and hospitalizations instead of using outpatient or home care services. These findings demonstrate that most older adults recognize that physicians are not always the most appropriate care provider and their services are not always needed. When asked who is responsible for reducing the misuse, individuals using the system, followed by governments and physicians were identified.

With restructuring of health care systems across Canada, monitoring how older adults rate their satisfaction with the care they personally receive and with their provincial and national health care systems will continue to be important outcome measures. Additionally, determining the best predictors of outcomes such as health status, perceived health, and satisfaction with care will ensure that the most appropriate and effective care is offered to older adults.

Best Predictors

Hierarchical (sequential) regression analyses were conducted to determine if SOC, self-esteem, mastery, and social support and then health services utilization improved prediction of the dependent variables beyond that afforded by the sociodemographic indicators. A description of the best predictors of health status, perceived health, and satisfaction with health care follows.

Health Status

In the young-old cohort, male gender was found to be a significant predictor of health status scores, although the variance accounted for by gender with the other variables held constant was only .34% ($.058^2$). Others have found that women tend to experience the onset of activity limitations earlier than men (National Advisory Council on Aging, 1996).

Similarly, being single, widowed, divorced, or separated was found to be a significant predictor. The variance accounted for by marital status with all the other variables partialed out was only .40% ($-.063^2$). This finding supports previous research that has reported that older single women have better health status than their married counterparts (Liefbroer & de Jong Gierveld, 1995; Perlman & Fehr, 1987; Roberge et al., 1995b).

Surprisingly, income and education were not significant predictors of health status scores in the young-old. These findings contradict the work of Shahtahmasebi and colleagues (1992) who reported in their longitudinal analysis of factors related to survival of the older adult that socioeconomic factors are important. The findings in the present study suggest that socioeconomic factors become less important as determinants of health status in the young-old.

Rather, SOC and mastery were shown to be stronger predictors of health status scores than the socioeconomic variables. The variances accounted for by SOC and by mastery with all the other variables partialed out were 3.72% ($.193^2$) and 4.88% ($.221^2$) respectively. These findings lend support to Antonovsky's (1987) salutogenic model: individuals who have enhanced SOC and feel that life is meaningful, manageable, and comprehensible have greater resilience to remain healthy and promote their health. Similarly, the findings support the belief that individuals with greater feelings of mastery have improved health (Penninx et al., 1997b).

Social involvement was the only social support predictor of health status scores. The variance accounted for by social involvement with the other variables held constant was .49% ($.070^2$). The relationship between social involvement and health status is reciprocal, those in better health are more likely to be involved in voluntary organizations and to attend religious services and vice versa. It is interesting to note that perceived social support and frequency of social contact were not significant predictors, although

frequency of social contact approached significance. These findings suggest that perceived support and the size and frequency of contact of the social network are not as important as social involvement in determining the health status of older adults. Other dimensions of social support such as received support and the intensity and quality of the support may be of more importance to this population.

Not surprisingly, overnight hospitalization and especially use of home care services were significantly related to health status scores in the young-old. The variances accounted for by hospitalization and use of home care services with the other variables held constant was .83% ($-.091^2$) and 7.51% ($-.274^2$) respectively. Indeed, the variable, use of home care services, had the strongest relationship with health status. Individuals in poorer health tended to be hospitalized and used home care services more than those in good health. These findings lend further support to the extensive research that has demonstrated that use of formal health services is related to functional disability (Branch et al., 1988; Chappell, 1994; Diwan et al., 1997; Grabbe et al., 1995; Moore & Rosenberg, 1997). The findings also demonstrate the need for home care services in this population.

In the old-old cohort, income adequacy was found to be significantly negatively related to health status. Those with lower income adequacy reported greater health status. However, the variance accounted for by income adequacy with the other variables held constant was only 1.61% ($-.127^2$). This negative relationship is difficult to explain and contradicts previous research that reports that individuals who are economically better off tend to live longer and healthier lives (National Advisory Council on Aging, 1996; Roberge et al., 1995a). One possible explanation for this finding may be that lower income older adults are eligible for more benefits that may affect their health status.

Once again, the psychological factors, namely SOC and mastery were shown to be significant predictors of health status scores and self-esteem approached significance in the old-old. The variances accounted for by SOC and by mastery with the other variables held constant were 2.22% ($.149^2$) and 3.42% ($.185^2$) respectively. These findings lend further support to Antonovsky's (1987) hypothesis that a strong SOC protects and promotes health, to the view that individuals with greater feelings of mastery have improved health (Penninx et al., 1997b), and to the hypothesis that self-esteem contributes to well-being (Krause, 1987a). None of the social support variables were found to be significant predictors of health status in this population, again suggesting that other dimensions of social support such as received support and the quality of the support may be of more importance to older adults.

The use of home care services in the old-old cohort was found to be the strongest significant predictor of health status. The variance accounted for by use of home care services with the other variables held constant was 6.66% ($-.258^2$). Those with poorer health status reported greater use of home care. This finding supports other research (Branch et al., 1988; Bull, 1994; Fredman et al., 1992; Grabbe et al., 1995; Kemper, 1992; Moore & Rosenberg, 1997) that suggests that the single strongest predictor of

home care use is functional disability. Additionally, home care use was the only significant predictor of the health service utilization variables. This underscores the importance of home care services to the old-old. Assistance with personal care and homemaking were significantly associated with the health status of the old-old while acute care services, consultations with health care professionals, and with alternative health professionals were not significantly related.

Perceived Health

In the young-old cohort, health status made the greatest contribution in predicting perceived health. The variance accounted for by health status with the other variables held constant was 11.70% ($.342^2$). This finding supports the research of others (Ebly et al., 1996; Segall et al., 1997) who have revealed that physical attributes were the best predictors of self-rated health.

Additionally, income adequacy and education were found to be significant predictors of perceived health. The variances accounted for by income adequacy and by education with the other variables held constant were .79% ($.089^2$) and .98% ($.099^2$) respectively. Those with higher incomes and education tended to perceive their health as better than those at lower socioeconomic levels. Several research studies (Johnson & Wolinsky, 1993; Statistics Canada 1995b) have demonstrated similar relationships.

Two of the psychological factors, SOC and self-esteem, were significant predictors of perceived health and mastery approached significance. The variances accounted for by SOC and by self-esteem with the other variables held constant were .62% ($.079^2$) and .64% ($.080^2$) respectively. These findings provide further evidence of the importance of the psychological factors in contributing to improved self-rated health. If older adults have a healthy outlook, have a belief in their ability to personally control a situation, and feel a sense of self-worth, then their health will be rated significantly higher (Antonovsky et al., 1990; Marshall, 1991; Rodin, 1990). Perceived social support and social involvement only approached significance in determining perceived health, suggesting that other dimensions of social support are perhaps more important predictors of perceived health in this population.

Not surprisingly, overnight hospitalizations and consultations with health care professionals were significantly related to perceived health. Use of home care services approached significance. The variances accounted for by hospitalizations and by consultations with health care professionals with the other variables held constant were 1.59% ($-.126^2$) and .49% ($-.070^2$) respectively. Those who perceived their health as poor made greater use of health care services.

As in the young-old cohort, health status made the greatest contribution in predicting perceived health and was the only significant predictor in the first model in the old-old cohort. The variance accounted for by health status with the other variables held constant was 6.55% ($.256^2$). None of the socioeconomic factors were significant

predictors of perceived health, as had been the case in the young-old cohort, suggesting that these variables become less important in determining perceived health in the old-old.

Interestingly, mastery continues to be the strongest psychological predictor of perceived health in the old-old, demonstrating the importance of a sense of control in this population. The variance accounted for by mastery with the other variables held constant was 2.99% ($.173^2$). Other researchers (Marshall, 1991; Rodin, 1990; Seeman & Seeman, 1983) have also reported that a high sense of control is significantly related to better self-rated health. Self-esteem approached significance.

Frequency of social contacts was a significant predictor of perceived health in the old-old. The higher the average number of contacts in the past 12 months with family members and friends predicted improved perceived health. The variance accounted for by frequency of social contacts with the other variables held constant was 1.54% ($.124^2$). This variable was more important in determining perceived health than perceived social support or social involvement which underscores the importance of received social support in the old-old. This result supports the extensive evidence that social support has a significant impact on health (Heaney & Israel, 1997; Stewart, 1993, 1995).

Among the utilization of health service variables, only overnight hospitalizations was found to be a significant predictor of perceived health. The variance accounted for by hospitalizations with the other variables held constant was 2.76% ($-.166^2$). Those who perceived their health as poor were hospitalized more frequently.

Satisfaction with Health Care in Canada

In the young-old cohort, gender, education, and immigrant status were significant predictors of satisfaction with the national health care system. The variances accounted for by gender, by education, and by immigrant status with the other variables held constant were .72% ($.085^2$), 1.39% ($.118^2$), and .42% ($.065^2$) respectively. The findings of the present research reveal that young-old males are more satisfied than females, those who have achieved higher levels of education, and those who have immigrant status are more likely to be satisfied with the health care system in Canada. Immigrants undoubtedly value the Canadian health care system as they are able to compare it with the health care system of their country of origin. No previous research, to the knowledge of the investigator, has examined predictors of satisfaction with a national health care system.

Young-old living in British Columbia and Ontario were also more satisfied with the national health care system while those living in Saskatchewan were less likely to be satisfied. The variances accounted for by living in British Columbia, by living in Ontario, and by living in Saskatchewan with all the other variables partialed out were 1.74% ($.132^2$), 3.10% ($.176^2$), and .96% ($-.098^2$) respectively. These results are difficult to explain as factors not examined may influence these relationships.

Once again, SOC was a significant predictor in the young-old cohort. The variance accounted for by SOC with the other variables held constant was .59% ($.077^2$). Those with a strong SOC, which includes a belief that the resources are available to meet their needs, were more likely to be satisfied with the Canadian health care system.

In the old-old cohort, three different variables predicted satisfaction with the Canadian health care system. Those who were married or had a partner and those who had consulted with health care professionals tended to be more satisfied with the national health care system. The variances accounted for by marital status and by consultations with health care professionals with all the other variables partialed out were 3.17% ($.178^2$) and 3.31% ($.182^2$) respectively. These findings underscore the importance of support (e.g., spouse or partner) and the importance of the contact with health care professionals in determining satisfaction with health care. However, those who had consulted with alternative practitioners were more likely to be dissatisfied. The variance accounted for by consultations with alternative health care professionals with the other variables held constant was 2.07% ($-.144^2$). This finding concurs with the work of Furnham and Forey (1994) who reported that users of alternative health services were more critical and skeptical about the efficacy of modern medicine.

Satisfaction with Provincial Health Care

In the young-old cohort, it is interesting to note that education, immigrant status, and residence in one of the same three provinces that predicted satisfaction with the national health care system also predicted satisfaction with the provincial health care systems. This is not surprisingly as one would expect the ratings of satisfaction with both levels of health care to be similar as the national system is comprised of the provincial systems. The variances accounted for by education and by immigrant status with all the other variables partialed out were .92% ($.096^2$) and .90% ($.095^2$) respectively.

Young-old living in British Columbia and Ontario were more satisfied with their provincial health care systems while those living in Saskatchewan were less likely to be satisfied. The variances accounted for by living in British Columbia, by living in Ontario, and by living in Saskatchewan with all the other variables partialed out were 1.35% ($.116^2$), 4.41% ($.210^2$), and .96% ($-.098^2$) respectively. As with satisfaction with the national health care system, these results are difficult to explain as factors not examined may influence these relationships.

Health status was the only other significant predictor of satisfaction with the provincial health care systems in the young-old. The variance accounted for by health status with all the other variables partialed out was .46% ($.068^2$). Those in better health were more likely to be satisfied. This finding supports the research of Schada (1988) who reported that patients with high needs were less satisfied with care.

Similar to satisfaction with health care in Canada, those in the old-old cohort who had greater contact with health care professionals were significantly more likely to be

satisfied with their provincial health care system. The variance accounted for by consultations with health care professionals with the other variables held constant was 6.35% ($.252^2$). Indeed, the variable, consultations with health care professionals, was the *only* significant predictor in the old-old cohort. This underscores the importance of the contact with health care professionals in influencing satisfaction with care in this population. The relationship between health care professionals and clients/patients has been extensively examined. The most consistent finding is care which is more "personal" is associated with higher levels of satisfaction (Cleary & McNeil, 1988; Forbes, 1996).

Satisfaction with Health Care Personally Received

In the young-old cohort, the independent variable that made the greatest contribution to the prediction of satisfaction with health care personally received was consultations with health care professionals. This finding once again underscores the importance of the contact with health care professionals in both the old-old and young-old cohorts in influencing their satisfaction with care and further supports previous research in this area (Cleary & McNeil, 1988; Hall, Roter, & Katz, 1988). The variance accounted for by consultations with health care professionals with the other variables held constant was 18.58% ($.431^2$).

Use of home care services was also found to be a significant predictor of satisfaction with care personally received. The variance accounted for by use of home care services with all the other variables partialed out was .38% ($.062^2$).

Once again, education and immigrant status were found to be significant predictors of satisfaction in the young-old. The variances accounted for by education and by immigrant status with all the other variables partialed out were .83% ($.091^2$) and .31% ($.056^2$) respectively. Those with higher levels of education and those who were immigrants tended to be more satisfied with the care that they personally received. Hall and Doran's (1990) conclusions following a meta-analysis of 221 satisfaction studies were contrary. They found a negative association between education and satisfaction, and no relationship with ethnicity to satisfaction with medical care. Perhaps the findings from the present study are a reflection that the predictors of satisfaction for older adults are different than the predictors in other age groups.

Living in Ontario and satisfaction with care personally received was also found to be significantly related. The variance accounted for by living in Ontario with the other variables held constant was 2.53% ($.159^2$). The finding that those living in Ontario are more likely to be satisfied with their care is difficult to explain as many factors unknown to the investigator may have contributed to this finding. Further exploration is needed.

In the old-old cohort, the findings were similar to those found in the young-old cohort. Consultations with health care professionals and use of home care services were significant predictors of satisfaction with care personally received. The variance accounted for by consultations with health care professionals with the other variables

held constant was 20.88% (.457²). The variance accounted for by home care services with all the other variables partialed out was 1.19% (.109²). These findings underscore the importance of the contacts with health care professionals and with home care in the old-old cohort.

However, use of alternative health care professions was found to predict dissatisfaction, perhaps for the reasons previously discussed. The variance accounted for by consultations with alternative health care professionals with the other variables held constant was 1.72% (-.131²). Those who consult with alternative health care professionals have been found to be more critical and skeptical about the efficacy of modern medicine (Furnham & Forey, 1994).

Living in Ontario and satisfaction with care personally received was also found to be significantly related. The variance accounted for by living in Ontario with the other variables held constant was 1.88% (.137²). Explaining the importance of living in Ontario as a predictor of satisfaction is once again difficult. This result may reflect a variety of unexamined factors, such as patterns of provincial health care spending, how health care is delivered, the professional credentials of the providers, and factors unknown to the investigator.

Summary

The purpose of the research was to expand existing knowledge on the determinants of health status and satisfaction with health care for the Canadian community-dwelling young-old and old-old. SOC, mastery, self-esteem, informal social support, and health services utilization were the primary focus of this study.

Mastery and SOC were found to be stronger predictors of health status than the sociodemographic indicators in both cohorts. Older adults who have an enhanced sense of control and SOC are more likely to feel that life is meaningful, manageable, and comprehensible and will have greater resilience to remain healthy and promote their health.

SOC and self-esteem were significant predictors of perceived health in the young-old and mastery was the strongest psychological predictor of perceived health in the old-old. These findings provide further evidence of the importance of the psychological factors in contributing to improved self-rated health. If older adults have a healthy outlook, have a belief in their ability to personally control a situation, and feel a sense of self-worth, then their health will be rated significantly higher (Antonovsky et al., 1990; Marshall, 1991; Rodin, 1990).

As well, SOC was a significant predictor of satisfaction with the national health care system in the young-old cohort. Those with a strong SOC, which includes a belief that the resources are available to meet their needs, were more likely to be satisfied with the Canadian health care system.

Social involvement was the only significant social support predictor of health status in the young-old and frequency of social contacts was a significant predictor of perceived health in the old-old. The relationship between social involvement and health status is reciprocal and the higher the average number of contacts in the past 12 months with family members and friends predicted improved perceived health. Other dimensions of social support such as received support and the intensity and quality of the support may be of more importance to this population.

Use of home care services had the strongest relationship with health status and was significantly correlated with satisfaction with care personally received in both the young-old and old-old cohorts. As well, overnight hospitalization was significantly related to health status in the young-old. Individuals in poorer health tended to use home care services and be hospitalized more frequently than those in good health. The findings demonstrate the need for home care services in this population.

Overnight hospitalization was a significant predictor of perceived health in both cohorts and consultations with health care professionals was significantly related to perceived health in the young-old. Those who perceived their health as poor made greater use of health care services.

Consultations with health care professionals was significantly related to satisfaction with the national and provincial health care systems in the old-old and was the strongest predictor of satisfaction with care personally received in both cohorts. Consultations with health care professionals was the only significant predictor of satisfaction with the provincial health care systems in the old-old cohort. These findings underscore the importance of the contact with health care professionals in influencing satisfaction with care in this population.

Consultations with alternative practitioners was found to be negatively related to satisfaction with the national health care systems and with care personally received in the old-old cohort. Users of alternative health services appeared more dissatisfied with traditional health care.

The findings of the present research must be considered in light of the limitations of the study. A discussion of the limitations follows.

Study Limitations

A limitation of any research that undertakes secondary analysis is that, by necessity, the study is restricted to examining the variables that were included in the original study. In the present research, analyses were restricted to the variables included in the Health Canada Supplement to the 1994/95 NPHS. The reliability and validity of the present study could have been enhanced if information on several variables was collected differently.

In relation to geographic location, only the province variable and not the urban-rural variable as originally planned could be used in the present study. An examination of the urban-rural data revealed that 37.9% of the data was non-applicable as it was not released for Northern Interior British Columbia and Ontario. Instead, health region information was provided on the public use file for these areas (D. Dekoker, Technical Research Officer, NPHS, Statistics Canada, personal communication, September 17, 1997). Due to the large percentage of missing data, the urban-rural variable was not used in the present study. This was a clear limitation as differences in the utilization of services have been noted between rural and urban residents (Alberta Health, 1996; Gerritson, Wolffensperger, & van den Heuvel, 1990) with the service needs of rural older adults becoming increasingly problematic (Northcott, 1992). The urban-rural variable would have given more precise and additional information.

The NPHS included two important psychological variables, namely SOC and mastery. Self-efficacy may have been a more appropriate alternative to the third psychological variable, self-esteem. Perceived self-efficacy is defined as "people's beliefs in their capabilities to mobilize the motivation, cognitive resources and courses of action needed to exercise control over task demands" (Bandura, 1988, p.1). Raphael (1993) in his review of self-esteem recommended that the focus of health promotion interventions should be "upon enhancing self-efficacy, self-attributions, or perceptions of control...rather than simple self-esteem enhancements....The emphasis should not be upon individuals' self-esteem, but rather on enhancing health and health-related behaviors" (p.24). This may involve developing individuals' means of coping or enhancing environmental opportunities.

The NPHS captured several of the dimensions of social support as proposed by Stewart (1995): structure or sources of support, functions (e.g., affirmational, instrumental, informational, and emotional), and duration (which will be revealed by the longitudinal panels and addressed in a future study). Although the frequency of social support was collected, the amount of assistance was not examined. As well, the appraisal dimension was lacking. This is a limitation as recipients appraise or evaluate the support with respect to direction (e.g., non-reciprocal or reciprocal) and drawbacks or benefits (e.g., negative or positive effects). Indeed, social conflict has been shown to have a stronger effect on outcomes than social support (Malone Beach & Zarit, 1995). Asking the respondents if the support they had received was helpful would have revealed the appraisal dimension of their social support. Glass and colleagues (1997) argue that any measurement strategies which assess only the existence of social support without measuring the reciprocity of the provision of support are psychologically naive.

Additionally, social involvement was measured by the frequency of participation in associations or voluntary organizations and the frequency of attendance at religious services in the last year. This indicator of social support requires a minimum level of functional capacity. In the frail older adult population this measure will most likely be confounded by physical and cognitive functioning which influences the assessment of social support (Glass et al., 1997).

A limitation of collecting data on the utilization of health care services in retrospective self-reports obtained from cross-sectional surveys, such as the NPHS, was the potential of recall error (Manderscheid, Rae, Narrow, Locke, & Regier, 1993). For example, a study that examined the ability of the elderly to accurately report ambulatory physician visits found that reporting error was systematically associated with sociodemographic and health status characteristics. Underreporting was significantly associated with disease history and the number of visits in the period (Glandon, Counte, & Tancredi, 1992). A more recent study supported these findings as a very low reliability was found for the recall of ambulatory physician visits over retrospective periods of increasing duration (Roberts, Bergstralh, Schmidt, & Jacobsen, 1996). However, this same study demonstrated that self-reports of inpatient hospital nights were in exact agreement with the respondents' medical records.

Given Roberts and colleagues' (1996) findings, estimates derived from the number of hospitalization nights were highly reliable whereas estimates of the number of professional consultations, alternative health consultations, and home care use in the past year were subject to traditional inaccuracies because they measured ambulatory visits, telephone consultations, home visits, and other contacts as recalled by the respondents. The NPHS minimizes the measurement error due to recall by measuring utilization over the past 12 months. However, individual utilization tends to fluctuate quite dramatically from year to year, thus single year measures have higher variability than measures based on utilization over a longer time period. This problem was amplified with the assessment of the number of drugs taken in the last 2 days. Some drugs may be prescribed to be taken less frequently than every other day or for certain time periods (e.g., 3 weeks per month). This is an example of intra-individual variability (Nesselroade & Hershberger, 1993). As group differences in utilization were examined, the intra-individual variability inflated the within group variance and resulted in overly conservative statistical tests of group differences (Liu, Stamler, Dyer, McKeever, & McKeever, 1978).

Perceived health was measured by asking respondents, "In general how would you describe your health: excellent, very good, good, fair, or poor?" Respondents were not asked to rate their health "for their age" which may have influenced how they responded. They may have rated their health in comparison to those at an earlier age or to those of similar age. Standards of reference in evaluating health changes with aging as older adults tend to rate their health more favorably than other age groups. Among older adults some loss of physical resources is accepted as part of "normal" aging (Liefbroer & de Jong Gierveld, 1995). Additionally, some respondents think about specific health problems when asked to rate their health, whereas others think in terms of either general physical functioning or health behaviours (Krause & Jay, 1994). Culture may also impact on how respondents define "normal" health (Boyd, 1996). Indeed, the measurement of perceived health indicated race biases as larger lambdas (factor loadings) were found for Whites than Blacks. The differences in lambdas imply that perceived health is not reflected to comparable degrees across racial groups (Johnson & Wolinsky, 1994). Asking respondents to rate their health for their age and in terms of their ability to function may have enhanced the accuracy of the measurement of perceived health.

Proxy reporting was allowed for reasons of illness or incapacity and accounted for 4% of the information collected. Patient-generated and family-generated assessments of patient physical health status have been shown to be highly correlated except when the patient is demented. In these situations, physical health is consistently rated as more impaired by family members than by the patients themselves (Kiyak, Teri, & Borson, 1994). In relation to patient psychosocial health status, this was not found to be the case. Variance in the patient-generated psychosocial score was related to physical function, psychological distress, cognitive status, and age. Proxy-generated psychosocial scores were primarily explained by the proxy's psychological distress and perceived burden (Rothman, Hedrick, Bulcroft, Hickam, & Rubenstein, 1991). Additionally, ratings of self-esteem have been found to differ between patient and confidant, with confidant scores significantly higher than self-ratings (Clipp & Elder, 1987). Similarly, satisfaction research has revealed that because informal caregivers derive their satisfaction from different perspectives than clients/residents, proxies cannot accurately express the residents' satisfaction with all areas of care (Lavizzo-Mourey, Zinn, & Taylor, 1992). Use of proxies to represent older adults' perceptions of their psychosocial status and satisfaction with care should be permitted only when necessary and the results should be interpreted with caution.

Suggestions for Future Research

Related to the limitations of the present study, it is recommended that the differences in the utilization of health care services between rural and urban residents be examined and the association of self-efficacy, rather than self-esteem, with health status and satisfaction with health care be determined in future research. The amount of instrumental support received and the appraisal dimension of their social support should also be measured. An assessment of the reliability of the number of professional health care consultations, the use of home care, and the number of prescribed drugs received could be determined by comparing the results of the present study with the findings from other surveys conducted during the same time period such as the Alberta Survey (Population Research Laboratory, University of Alberta) and with data collected by provincial governments. However, it is recognized that self-defined health visits are not necessarily defined in the same way by the health care professional (Mechanic, Angel, & Davies, 1992). Lastly, it is recommended that perceived health be measured by asking respondents to rate their health for their age and in terms of their ability to function.

Retrospective, self-report, cross-sectional surveys capture only basic information on the areas of interest. Further research is needed in the following areas: measurement of the effectiveness of interventions to enhance SOC, mastery, and self-efficacy in the young-old and old-old; exploration of the dimensions of social support that are most important to this age group and the differences between men and women; examination of the determinants of health within specific groups of older adults such as the Aboriginal population; measurement of the safety and effectiveness of alternative and complementary interventions; further exploration of the factors that contribute to the provincial differences in health status and satisfaction; and examination of the impact of

culture in defining health, health care preferences, and organizational barriers to service use in the young-old and old-old. Additionally, future research should include a description and examination of older adults who are institutionalized since the present research captured only one segment of the elderly population, namely community-dwelling older adults.

Additionally, in all cross-sectional designs, the time dimension is neglected. Thus, causes of health status, perceived health, and satisfaction could not be determined. Indeed, the relationship between health and the independent variables may be reciprocal. Does a high income, high levels of SOC, a sense of control, and beneficial social support promote overall health or do people in better health tend to have higher incomes, perceive the world as more manageable, meaningful, and comprehensive, and have greater social support? Examination of future cycles of the NPHS will provide insight into the causal links between the determinants of health and health status. Longitudinal studies will also reveal the differences between successive cohorts of elderly. Each cohort is expected to appear strikingly different if determinants such as education and income levels change (Rodin, 1990). The effects of maintenance and preventive interventions on health status will be able to be monitored over time as these interventions require long follow-up periods before their impact is felt (Health Services Utilization and Research Commission, 1996). Additionally, longitudinal studies will enable the effects of public policy, particularly during times of reduced fiscal resources, to be evaluated over time. Prospective, longitudinal studies are needed to determine directionality of the relationships between variables, to detect changes in the patterns of health over time, and to determine the effectiveness of interventions and public policy over time.

Policy, Program, and Practice Implications

The Canadian context is changing with the aging of the population and with dramatic health care restructuring that has resulted in the closure of thousands of acute care and long term care beds and cuts in social programs. Within this context the National Forum on Health (1997) has emphasized a shift in focus to societal and economic determinants of health while not diminishing the important contribution made by the promotion of healthy lifestyles, physical environment, and genetics. Decisions must be "based on appropriate, balanced and complete information on what works best" (National Forum on Health, 1997, p. 18). The present research demonstrates the significant determinants of health and satisfaction with health care for the young-old and old-old. Strategies that will assist policy makers, program planners, and practitioners in ensuring that the significant determinants of health and satisfaction are addressed and supported are suggested in the following discussion.

Health Status and Perceived Health

In both the young-old and old-old cohorts SOC and mastery were stronger predictors of health status than the sociodemographic variables. As well, SOC and self-esteem were significant predictors of perceived health in the young-old cohort and mastery was a significant predictor in the old-old cohort. These findings illustrate the importance of these psychological factors. Individuals with a strong SOC, mastery, and self-esteem are more likely to redefine the meaning of a stressful situation, select realistic coping strategies, and avoid potentially maladaptive or unhealthy behaviours (Baro, Haepers, Wagenfeld, & Gallagher, 1996).

The findings revealed that income was significantly associated with SOC and mastery in the young-old. The challenge in times of deficit reduction will be to maintain and where possible improve benefits such as the federal Old Age Security (OAS), the Guaranteed Income Supplement (GIS), the Spouse's Allowance, the Canada/Quebec Pension Plan and income supplements provided by five provinces and territories (Canadian Public Health Association, 1997).

Education was also found to be significantly related to SOC, mastery, and self-esteem in the young-old and to mastery in the old-old. Older adults with greater levels of education are more likely to select healthier lifestyles, choose effective coping strategies, access appropriate resources, and negotiate the health care system. Promoting access to health care information through telephone support lines such as the *Seniors Healthline* and through electronic information systems such as the *Alberta Wellnet* are approaches that will assist older adults in making informed decisions. Indeed the Internet is an unlimited resource that is increasingly utilized by this population. Another important resource is academics and researchers. The sharing of scientific and experiential knowledge would be promoted by recognizing publications in lay newsletters and consultations with small organizations and groups in the tenure and promotion process of faculty members (Green, 1994).

All of the social support variables were significantly positively related to SOC and most were related to self-esteem and mastery in both cohorts. As well, frequency of social contacts was a significant predictor of perceived health in the old-old cohort. Those who had greater contact with family, friends, and neighbors perceived their health to be better. Support networks may influence health directly by providing information and assisting with activities of daily living and indirectly through enhancing SOC, mastery, and self-esteem. Supportive individuals may also affect the appraisal of the stressor, influence the choice of the coping strategy, and augment the coping resources (Stewart et al., 1997).

Within the current Canadian health care infrastructure little is done to enhance supportive networks as there is a discordance between the demographic realities of an aging population that tends to suffer from chronic conditions and the existing healthcare system that is oriented towards acute medical care. Health care reform includes a vision

of expanding the community care system through the redistribution of dollars from the medical care system. However, to date, few resources have been allocated to the community. Indeed, the amounts of community funding are infinitesimal compared to those devoted to acute care and physician salaries (Beland & Lemay, 1996). Rather, the burden is being placed on the shoulders of informal caregivers who are primarily women (Chappell, 1996).

Community health nurses can play an important role in mobilizing and augmenting the support received by older adults and their caregivers. An initial assessment by the nurse should include: "types of support required...; sources of support; reciprocity of support; costs and benefits associated with support; satisfaction with support;...underuse and overuse of support resources; and timing and duration of support" (Stewart et al., 1997, p. 100). Based on an assessment of potential and existing problems and on the social support assessment, community nurses may respond by providing informational and emotional support. Practical advice related to self-care practices such as medication use, proper nutrition, adequate sleep, and safety may be discussed. Social support resources such as support groups for the elderly and their caregivers, self-help groups, telephone support, and electronic support as well as other kinds of community resources may be shared with older adults. Community nurses have the opportunity to enhance older adults' SOC, sense of mastery, and self-esteem by fostering trust, praising positive behaviour, encouraging choice, and affirming the individual's perspective (Stewart, 1995). The impact of the support intervention should be monitored and measured over time.

The use of home care services was the strongest significant predictor of health status in both the young-old and old-old cohorts. Interestingly, overnight hospitalization was found to be a significant predictor of *perceived* health in both cohorts while use of home care only approached significance in the young-old. Canadians' commitment to the values and principles of the Canada Health Act, confirmed by the findings in the present study, have enabled home care programs across Canada to secure funding from the public sector, to be viewed as legitimate components of the health care system, and to exist within the continuum of care (Havens, 1995). The National Forum on Health (1997) recently reinforced the importance of home care as an integral part of publicly funded health services. However, Canadians also value individuality, risk-taking, and the right to make their own personal choices (Havens, 1995). Because of the strongly held value of individuality and because home care programs are not regulated by the five principles of the Canada Health Act, a great diversity of programs are offered from province to province and even among jurisdictions within provinces.

By making available certain "core" services to all older adults and offering other "non-core" services to selected areas or individuals, a balance may be achieved between the competing principles of universality and individuality. The "core services" would reflect the needs of individuals with substantial functional deficits or complex care needs and may include services such as professional services (e.g., nursing, physicians, rehabilitation therapists, social workers), homemakers, personal care aides, medical

supplies, medically necessary drugs, respite care, adult day care, and meals on wheels. The "non-core" services would reflect those services used by the well and frail older adults (e.g., transportation services, congregate meals, home maintenance programs, personal emergency response systems, and elder abuse resource centres). However, until there is some greater consensus about what services are "core", most programs will continue to make these decisions primarily based on available resources (Havens, 1995). Initial work in this area is currently being conducted by the Canadian Home Care Association which has received funding from Health Canada's Health Transition Fund to describe various aspects of the provincial and territorial home care programs (Canadian Home Care Association, 1997).

A social model of care rather than a medical model of care may be a more appropriate approach to providing home care services. Traditionally, all health care has been organized to have physicians respond to acutely ill patients in hospitals. However, this organizational structure does not respond well to older adults with chronic diseases. These individuals seldom continue to respond to active treatment and have other needs that are beyond the parameters of acute care. Rather, a social model of care may ensure that the organization assigns high priority to the long-term care needs of their clients, adjusts to the needs of the clients, views informal caregivers as partners in the care plan, and is committed to finding innovative client-centred solutions. Most importantly, home care may be viewed as more essential than institutional care. This perspective stems from a least interventionist approach which would ask the question, "Why undertake a major intervention if lesser treatments may be nearly as successful?" (Havens, 1995, p. 257).

Satisfaction with Health Care

Although gender (male), education, immigrant status, and having a partner were all significantly related to satisfaction with health care, the strongest predictor of satisfaction with national and provincial health care systems in the old-old cohort and with care personally received in both cohorts was consultations with health care professionals. This finding exemplifies the importance of consultations with health care professionals in predicting satisfaction with health care not only at the individual level but also at the provincial and national levels. As previously noted, the interpersonal skills of the formal care providers and their ability to provide more personal care were found to be the most important dimension of satisfaction with care received. Attributes of the health care worker such as friendliness, sensitivity to client needs and wishes, and willingness to do extras were identified as important sources of satisfaction and dissatisfaction among elderly home care clients (Forbes, 1994b; 1996).

Thorne and Robinson (1988) advocate that a reciprocal trusting relationship is a necessary component of satisfying, effective health care relationships. To assist in developing a reciprocal trust the health care professional should develop skill in listening with intent, curb preconceptions, solicit patient perspectives, and validate conclusions. Bergum (1993) has developed a nurturance model of interaction between health care professionals and their clients. She posits that knowledge for ethical clinical judgment

should evolve through three ways of knowing: a) knowledge of the subjective experience through listening to the client's experiences; b) deliberate or objective abstraction through technical thinking and rationality; and c) participation by focusing on understanding human experiences. Subjective information is revealed by the client and objective information is provided by the health care professional, with the focus on understanding what meaning the experience has for the client. Because of the significant correlation between the relationship with health care professionals and satisfaction, it is imperative that health care professionals develop and incorporate these skills which are fundamental to successful and effective relationships.

The findings from the present research also revealed that those in the old-old cohort who consulted with alternative health care professionals tended to be more dissatisfied with the national health care system and with care personally received. These findings suggest that individuals within the old-old cohort who are dissatisfied with the traditional provision of health care seek services elsewhere. Perhaps the use of alternative health care modalities is related to the greater emphasis on holistic health care, health promotion, disease prevention, and self-care (Furnham & Forey, 1994; Northcott & Bachynsky, 1993). There is little question that the demand for alternative and complementary services will increase as the population ages and the prevalence of multiple chronic diseases increases with age (Millar, 1997).

Similar to the diversity of home care services available to older Canadians, there is variation in the funding of various alternative health care services under provincial health care plans. For example, the western provinces include some form of payment for chiropractic services while the provincial insurances in Quebec and some Atlantic provinces do not extend to chiropractic services (Millar, 1997). To assist policy makers in their decisions related to which services to include in their provincial health care plans and to promote a greater consensus across Canada, the effectiveness of alternative practices needs to be evaluated and monitored over time with the same criteria used for treatments in conventional practice.

The nursing profession has been supportive of alternative modalities, such as therapeutic touch, that have traditionally been considered outside the paradigm of modern medicine. Nurses are in an ideal position to offer clients a range of self-care modalities, including alternative therapies, that enable older adults to better manage their health. Through education and practice of safe alternative therapies, nurses, as well as other health care professionals, can provide clients with additional options to the conventional medical modalities (McClennon-Leong, 1997).

The findings that young-old residents of Ontario and British Columbia tended to be more satisfied with the national and provincial health care systems while those living in Saskatchewan were more likely to be dissatisfied and the findings that young-old and old-old residents of Ontario were more likely to be satisfied with the care they personally received requires further examination. These findings may reflect that residents in Ontario and British Columbia have on average a higher education, a higher family

income, a lower rate of risky behaviours such as heavy drinking (while driving after drinking is most common in Saskatchewan), more health promotion programs, higher provincial health spending per person, and longer average length of stays in hospital than do residents of Saskatchewan (Federal, Provincial & Territorial Advisory Committee on Population Health, 1996). However, further research needs to be conducted to understand why residents in particular areas are more satisfied than others. Analyzing satisfaction at the provincial level may conceal other factors that are more important in determining satisfaction with health care.

Lastly, addressing the identified weaknesses of the health care system may enhance older adults' satisfaction with health care. Rather than physicians treating minor ailments, administering immunizations, and routine examinations, nurses could be providing these services at less cost to the system. Reducing the number of prescription drugs, diagnostic tests, and hospitalizations were also suggested as remedies for decreasing the misuse/abuse of the system. The dollars saved by utilizing nurses instead of physicians and by reducing unnecessary treatments could be redirected to community-based health promotion programs for older adults.

Conclusion

With the Canadian population aging and with health care restructuring occurring across Canada, increasing numbers of old-old individuals will need to be supported and maintained within their communities. The present research has examined sociodemographic attributes, psychosocial variables, and use of health care services of the young-old and the old-old to determine the best predictors of health status, perceived health, and satisfaction with the provincial and national health care systems and with care personally received.

SOC and mastery are stronger predictors of health status than sociodemographic indicators in both the young-old and old-old cohorts. Policy makers, program planners, and practitioners must place a greater focus on the importance of these predictors. However, the use of home care services had the strongest association with health status in both cohorts. Use of home care had a stronger relationship with health status than overnight hospitalizations and consultations with health care professionals. This exemplifies the importance of home care to this population and should justify home care as a legitimate component of the health care system which requires additional secure funding from the public sector.

Not surprisingly health status was found to be the strongest predictor of *perceived* health in both cohorts. Income adequacy and education were positively related to perceived health in the young-old cohort, supporting the extensive research in this area (Guralnik & Kaplan, 1989; Mustard & Frank, 1991; National Advisory Council on Aging, 1996; Roberge et al., 1995a). However, these factors were not significant in the old-old cohort, suggesting that the socioeconomic indicators become less important in old age. The psychological factors, SOC and self-esteem in the young-old and mastery in

the old-old cohort, were also significant predictors, illustrating the important contribution these factors make to perceived health. Interestingly, hospitalizations and consultations with health care professionals were significant predictors of perceived health in the young-old and hospitalizations was a significant predictor in the old-old. Use of home care services was not a significant predictor.

The predictors of satisfaction with the provincial and national health care systems in the young-old cohort tended to be the sociodemographic indicators. Gender (male), education, immigrant status, and province of residence (Ontario, British Columbia, and Saskatchewan) were significantly related to satisfaction. However, in the old-old cohort, having a partner and consultations with health care professionals were positively related to satisfaction with health care in Canada. Consultations with health care professionals was the only significant predictor of satisfaction with the provincial health care systems in the old-old and was the strongest predictor in both cohorts of satisfaction with care personally received. These findings underscore the importance of the contact with health care professionals in predicting satisfaction with health care. Consultations with alternative health professionals was negatively related to satisfaction with the national health care system and with care personally received in the old-old suggesting that those who utilize alternative services are less satisfied with traditional health care.

The identification of the best predictors of health and satisfaction with health care for the young-old and old-old cohorts provides direction to policy makers, program planners, and practitioners so that efforts can be made to strengthen individual, family, and community resources. The findings of the present research will contribute to the knowledge required to make sound policies and sensible resource allocation decisions that are needed to maintain older adults in their communities.

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Appendix A

Study Variables

Variable Name	Description		Code
SOCIODEMOGRAPHIC INDICATORS			
AGEGRP	Grouped age cohorts		
	65 to 69 years		12
	70 to 74 years		13
	75 to 79 years		14
	80 years or older		15
	Recoded		
	65 to 79 years		1
	80 years or older		2
SEX	Respondent's gender		
	female		0
	male		1
MARSTATG	Current marital status, grouped		
	married/common-law/partner		1
	single		2
	widowed/divorced/separated		3
	not stated		9
	Recoded		
	other		0
	married/common-law/partner		1
DVEDC294	Derived highest level of education obtained		
	no schooling		1
	elementary school		2
	some secondary school		3
	secondary school graduation		4
	other beyond high school		5
	some trade school etc.		6
	some community college		7
	some university		8
	diploma/certificate trade school		9
	diploma/certificate col, CEGEP		10
	bachelor degree (includes LLB)		11
	master/doctorate (includes MD)		12
	not stated		99
DVINC594	Derived income adequacy in 5 discrete categories. This variable is based on household income and the size of the household.		
	lowest income:	less than $10,000/1 to 4 persons	1
		less than $15,000/5 or + persons	1
	lower middle:	$10,000 to $14,999/1 or 2 persons	2
		$10,000 to $19,999/3 or 4 persons	2
		$15,000 to $29,999/5 or + persons	2
	middle income:	$15,000 to $29,999/1 or 2 persons	3
		$20,000 to $39,999/3 or 4 persons	3
		$30,000 to $59,999/5 or + persons	3
	upper middle:	$30,000 to $59,999/1 or 2 persons	4
		$40,000 to $79,999/3 or 4 persons	4
		$60,000 to $79,999/5 or + persons	4

	highest income:	$60,000 or more/1 or 2 persons	5
		$80,000 or more/3 persons or more	5
	not stated/not applicable		9
DVLVNG94	Derived variable of the family arrangements of the selected respondent.		
	unattached individual living alone		1
	unattached individual living with others		2
	spouse/partner living with spouse/partner		3
	parent living spouse/partner & child		4
	single parent living with children only		5
	child living with single parent		6
	child living with single parent & siblings		7
	child living with two parents		8
	child living with two parents & siblings		9
	other		10
	not stated		99
PROVINCE	Province at the time of interview		
	Newfoundland		10
	Prince Edward Island		11
	Nova Scotia		12
	New Brunswick		13
	Quebec		24
	Ontario		35
	Manitoba		46
	Saskatchewan		47
	Alberta		48
	British Columbia		59
NFDL	other		0
	Newfoundland		1
PEI	other		0
	Prince Edward Island		1
NS	other		0
	Nova Scotia		1
NB	other		0
	New Brunswick		1
QUE	other		0
	Quebec		1
ON	other		0
	Ontario		1
MN	other		0
	Manitoba		1
SASK	other		0
	Saskatchewan		1
AB	other		0
	Alberta		1
BC	other		0
	British Columbia		1
DVBORNG	Derived respondent's place of birth - grouped		
	Canada		1
	United States & Mexico		2
	South America & Africa		3
	Europe & Australia		4
	Asia		6
	not stated		99

DVIMMIG — Derived length of time in Canada since immigration.

0 to 4 years	1
5 to 9 years	2
10 years or more	3
born in Canada	6
not stated	9

DVLANG94 — Derived language in which respondent is able to conduct a conversation.

English only	1
French only	2
English and French only	3
other	4
not stated	99

IMMIG_FLG — Derived flag indicating that the respondent is an immigrant.

no	0
yes	1
not stated	9

SENSE OF COHERENCE

DVSCI94 — Derived Sense of Coherence Scale: 13-item version of the SOC scale developed by Antonovsky. Higher scores indicate a stronger sense of coherence.

Comprehensibility:

How often in the past were you surprised by the behaviour of people whom you thought you knew well?

never		0
always	(scoring reversed)	6

How often do you have the feeling you are in an unfamiliar situation and don't know what to do?

very often	0
very seldom or never	6

How often do you have very mixed up feelings and ideas?

very often	0
very seldom or never	6

How often do you have feelings inside that you would rather not feel?

very often	0
very seldom or never	6

When something happens, do you generally overestimate or underestimate its importance or do you see things in the right proportion?

over or underestimate	0
right proportion	6

Manageability

How often have people you counted on disappointed you?

never		0
always	(scoring reversed)	6

How often do you have the feeling that you are being treated unfairly?

very often	0
very seldom or never	6

Many people, even those with a strong character, sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

very seldom or never		0
very often	(scoring reversed)	6

How often do you have feelings that you're not sure you can keep under control?

very often 0
very seldom or never 6

Meaningfulness

How often do you have the feeling that you don't really care about what goes on around you?
very seldom or never 0
very often (scoring reversed) 6

How often do you have the feeling that there's little meaning in the things you do in your daily life?
very often 0
very seldom or never 6

Until now has your life had no clear goals or purposes, or has it had very clear goals and purposes?
no clear goals 0
very clear goals 6

Is doing the things you do every day a source of great pleasure and satisfaction or a source of pain and boredom?
pleasure and satisfaction 0
pain and boredom (scoring reversed) 6

SELF-ESTEEM

DVESTI94 Self-esteem index: sum of all items of ESTEEM-Q1. Scores on the index are based on a subset of items from the self-esteem Rosenberg scale (1979). Higher scores indicate greater self-esteem.

ESTEEM-Q1a You feel that you have a number of good qualities.
ESTEEM-Q1b You feel that you're a person of worth at least equal to others.
ESTEEM-Q1c You are able to do things as well as most other people.
ESTEEM-Q1d You take a positive attitude toward yourself.
ESTEEM-Q1e On the whole you are satisfied with yourself.
ESTEEM-Q1f All in all, you're inclined to feel you're a failure. (scoring reversed)
strongly disagree 0
disagree 1
neither agree nor disagree 2
agree 3
strongly agree 4

MASTERY

DVMASI94 Mastery Index: sum of all items of MAST-Q1. The index measures sense of mastery and is based on the work of Pearlin and Schooler (1978). Higher scores indicate superior mastery.

MAST-Q1a You have little control over the things that happen to you.
MAST-Q1b There is really no way you can solve some of the problems you have.
MAST-Q1c There is little you can do to change many of the important things in your life.
MAST-Q1d You often feel helpless in dealing with problems of life.
MAST-Q1e Sometimes you feel that you are being pushed around in life.
MAST-Q1f What happens to you in the future mostly depends on you. (scoring reversed)
MAST-Q1g You can do just about anything you really set your mind to. (scoring reversed)
strongly agree 0
agree 1
neither agree or disagree 2
disagree 3
strongly disagree 4

INFORMAL SOCIAL SUPPORT

DVSSI194	Derived Perceived Social Support Index: sum of all responses from questions SUP_Q3 to SUP_Q6. Higher scores indicate greater perceived social support.	
SUP_Q3	Do you have someone you can confide in/talk to about your private feelings?	
	no	0
	yes	1
	not stated	9
SUP_Q4	Do you have someone you can really count on in a crisis situation?	
	no	0
	yes	1
	not stated	9
SUP_Q5	Do you have someone you can really count on when you make personal decisions?	
	no	0
	yes	1
	not stated	9
SUP_Q6	Do you have someone who makes you feel loved and cared for?	
	no	0
	yes	1
	not stated	9
SUP_Q1	Are you a member of any voluntary organizations or associations?	
	no	0
	yes	1
	not stated	9
DVSSI294	Derived Social Involvement Scale: sum of valid answers from questions SUP_Q2 to SUP_Q2A. Higher scores indicate greater social involvement.	
SUP_Q2	How often do you participate in meetings/activities sponsored by voluntary organizations or associations?	
	not at all	0
	at least once a year	1
	at least 3 or 4 times a year	2
	at least once a month	3
	at least once a week	4
	not applicable	6
	not stated	9
SUP_Q2A	How often did you attend religious services/meetings in the past 12 months?	
	not at all	0
	at least once a year	1
	at least 3 or 4 times a year	2
	at least once a month	3
	at least once a week	4
	not applicable	6
	not stated	9
DVSSI394	Derived average frequency of contacts is based on questions SUP_Q7A-H. It measures the average number of contacts in the past 12 months with family members and friends who are not part of the household and with neighbours. A higher number indicates more contacts.	
SUP_Q7A	How often did you have contact with your parents or parents-in-law?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3

	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96
	not stated	99
SUP_Q7C	How often did you have contact with your daughters or daughters-in-law?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3
	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96
	not stated	99
SUP_Q7D	How often did you have contact with your sons or sons-in-law?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3
	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96
	not stated	99
SUP_Q7E	How often did you have contact with your brothers or sisters?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3
	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96
	not stated	99
SUP_Q7F	How often did you have contact with other relatives (including in-laws)?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3
	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96
	not stated	99
SUP_Q7G	How often did you have contact with your close friends?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3
	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96

	not stated	99
SUP_Q7H	How often did you have contact with your neighbours?	
	never	0
	once a year	1
	a few times a year	2
	once a month	3
	2 or 3 times month	4
	at least once a week	5
	every day	6
	don't have any	96
	not stated	99

HEALTH SERVICES UTILIZATION

UT_Q1	In the past 12 months, have you been a patient overnight in hospital?	
	no	0
	yes	1
	not stated	9
UT_Q1A	For how many nights? Respondents who answered UT_Q1=1 were asked this question. Numeric values represent number of nights in the past 12 months. More than 31 nights were set to a value of 31.	
	number of nights	1-31
	not applicable	996
	not stated	999
UT_Q9A	Have you received any home care services in the past 12 months?	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ10_A	Received nursing care services (including V.O.N.)? Respondents who answered UT_Q9A = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ10_B	Received housework services (including homemaker/home care)? Respondents who answered UT_Q9A = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ10_C	Received personal care services? Respondents who answered UT_Q9A = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ10_D	Received meal preparation services? Respondents who answered UT_Q9A = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9

UTQ10_E	Received shopping services? Respondents who answered UT_Q9A = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ10_F	Received other home care services? Respondents who answered UT_Q9A = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
DVHPCN94	Derived consultations with any health professionals in the past 12 months. Based on UT_Q2A to UT_Q2J.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UT_Q2A	In the past 12 months, how many times have you consulted with a general practitioner? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2B	How many times have you consulted with an eye specialist in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2C	How many times have you consulted with another medical doctor in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2D	How many times have you seen a nurse for care or advice in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2E	How many times have you consulted with a dentist/orthodontist in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2F	How many times have you consulted with a chiropractor in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2G	How many times have you consulted with a physiotherapist in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999

UT_Q2H	How many times have you consulted with a social worker/counsellor in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2I	How many times have you consulted with a psychologist in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
UT_Q2J	How many times have you consulted with a speech therapist etc. in the past 12 months? Numeric values represent number of consultations in the past 12 months. More than 31 consultations were set to a value of 31.	
	number of consultations	0-31
	not stated	999
DRG_Q2	In the last 2 days, how many different medications did you take? More than 31 medications were set to a value of 31.	
	number of medications	0-31
	not applicable	996
	not stated	999
UT_Q4	Have you consulted with an alternative health care provider in the past 12 months?	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ5_A	Did you consult with a massage therapist in the past 12 months? Respondents who answered UT_Q4 = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ5_B	Did you consult with an acupuncturist in the past 12 months? Respondents who answered UT_Q4 = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ5_C	Did you consult with a homeopath or naturopath in the past 12 months? Respondents who answered UT_Q4 = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
UTQ5_OTH	Did you see or consult with any other alternative health professional? Respondents who answered UT_Q4 = 1 were asked this question.	
	no	0
	yes	1
	not applicable	6
	not stated	9
DRG_Q4	Do you take other health products such as ointments, vitamins, herbs etc.?	
	no	0
	yes	1
	not applicable	6

	not stated	9
H_Q12	Would you go to a health care clinic, rather than a hospital or private doctor's office for a routine physical exam?	
	no	0
	yes	1
	not applicable	6
	not stated	9
H_Q13	Would you allow a nurse to give you a routine physical exam?	
	no	0
	yes	1
	not applicable	6
	not stated	9
H_Q14	Would you go to a health care clinic, rather than a hospital or private doctor's office to receive shots (immunizations)?	
	no	0
	yes	1
	not applicable	6
	not stated	9
H_Q15	Would you allow a nurse, rather than a doctor, to give you immunization shots?	
	no	0
	yes	1
	not applicable	6
	not stated	9

HEALTH STATUS

DVGHI94	Derived Health Description Index In general, would you say your health is:	
	poor	1
	fair	2
	good	3
	very good	4
	excellent	5
DVHST94	Derived Health Status Index (Health Utility Index) is based on the Composite Health Status Measurement System (CHSMS) developed at McMaster University. A summary health value between 0 and 1 is obtained based on the questions HSTAT-Q1 to HSTAT-Q30.	
	index score	.031-1
	not stated	9
HSTAT-Q1	Are you *usually* able to see well enough to read ordinary newsprint *without* glasses or contact lenses? (yes/no)	
HSTAT-Q2	Are you *usually* able to see well enough to read ordinary newsprint *with* glasses or contact lenses? (yes/no)	
HSTAT-Q3	Are you able to see at all?	
HSTAT-Q4	Are you able to see well enough to recognize a friend on the other side of the street *without* glasses or contact lenses? (yes/no)	
HSTAT-Q5	Are you *usually* able to see well enough to recognize a friend on the other side of the street *with* glasses or contact lenses? (yes/no)	
HSTAT-Q6	Are you *usually* able to hear what is said in a group conversation with at least three other people *without* a hearing aid? (yes/no)	
HSTAT-Q7	Are you *usually* able to hear what is said in a group conversation with at least three other people *with* a hearing aid? (yes/no)	
HSTAT-Q7a	Are you able to hear at all? (yes/no)	
HSTAT-Q8	Are you *usually* able to hear what is said in a conversation with one other person in a quiet room *without* a hearing aid? (yes/no)	

HSTAT-Q9	Are you *usually* able to hear what is said in a conversation with one other person in a quiet room *with* a hearing aid? (yes/no)
HSTAT-Q10	Are you *usually* able to be understood *completely* when speaking with strangers in your own language? (yes/no)
HSTAT-Q11	Are you *usually* able to be understood *partially* when speaking with strangers? (yes/no)
HSTAT-Q12	Are you *usually* able to be understood *completely* when speaking with those who know you well? (yes/no)
HSTAT-Q13	Are you able to be understood *partially* when speaking with those who know you well? (yes/no)
HSTAT-Q14	Are you *usually* able to walk around the neighborhood *without* difficulty and *without* mechanical support such as braces, a cane or crutches? (yes/no)
HSTAT-Q15	Are you able to walk at all? (yes/no)
HSTAT-Q16	Do you require mechanical support such as braces, a cane or crutches to be able to walk around the neighborhood? (yes/no)
HSTAT-Q17	Do you require the help of another person to be able to walk? (yes/no)
HSTAT-Q18	Do you require a wheelchair to get around? (yes/no)
HSTAT-Q19	How often do you use a wheelchair? (always/often/sometimes/never)
HSTAT-Q20	Do you need the help of another person to get around in the wheelchair? (yes/no)
HSTAT-Q21	Are you *usually* able to grasp and handle small objects such as a pencil and scissors? (yes/no)
HSTAT-Q22	Do you require the help of another person because of limitations in the use of hands or fingers? (yes/no)
HSTAT-Q23	Do you require the help of another person with: (some tasks/most tasks/almost all tasks/all tasks)?
HSTAT-Q24	Do you require special equipment, for example, devices to assist in dressing because of limitations in the use of hands or fingers? (yes/no)
HSTAT-Q25	Would you describe yourself as being *usually*: (happy and interested in life/ somewhat happy/somewhat unhappy/ unhappy with little interest in life/so unhappy that life is not worthwhile)?
HSTAT-Q26	How would you describe your *usual* ability to remember things: (able to remember most things/somewhat forgetful/very forgetful/unable to remember anything at all)?
HSTAT-Q27	How would you describe your *usual* ability to think and solve day to day problems? Are you: (able to think clearly and solve problems/having a little difficulty/ having some difficulty/having a great deal of difficulty/unable to think to solve problems)?
HSTAT-Q28	Are you *usually* free of pain or discomfort? (yes/no)
HSTAT-Q29	How would you describe the *usual* intensity of your pain or discomfort? (mild/moderate/severe)
HSTAT-Q30	How many activities does your pain or discomfort prevent? (none/a few/some/most)

SATISFACTION WITH HEALTH CARE

H_Q26	Overall how would you rate health care in Canada?	
	poor	1
	fair	2
	good	3
	excellent	4
	not applicable	6
	not stated	9

H_Q27	How would you rate the health care system in your province?	
	poor	1
	fair	2
	good	3
	excellent	4
	not applicable	6
	not stated	9
H_Q28	How would you rate the quality of health care that you personally have received in the past 12 months?	
	didn't receive any	0
	poor	1
	fair	2
	good	3
	excellent	4
	not applicable	6
	not stated	9
H_Q29A-H	What do you think are the main strengths of Canada's health care systems?	
	No cost? (yes/no)	1/2
	Access? (yes/no)	1/2
	Quality of care? (yes/no)	1/2
	Universality (available to rich and poor)? (yes/no)	1/2
	Portability (available when visiting another province)? (yes/no)	1/2
	Free to choose the doctor and location of treatment? (yes/no)	1/2
	Range of services available? (yes/no)	1/2
	Other (specify)? (yes/no)	1/2
H_Q30A-G	What do you think are the main weaknesses of Canada's health care systems?	
	Too long between the call and appointment or visit? (yes/no)	1/2
	Quality of care? (yes/no)	1/2
	Lack of available services? (yes/no)	1/2
	Cost of system? (yes/no)	1/2
	Lack of technology/equipment/tests? (yes/no)	1/2
	Other (specify)? (yes/no)	1/2
	The misuse/abuse? (yes/no)	1/2
H_Q31	Do you think there is misuse in Canada's health care systems?	
	yes	1
	no	2
	not applicable	6
	not stated	9
H_Q32A-F	In which areas do you think there is misuse?	
	Number of doctor's visits for minor ailments? (yes/no)	1/2
	Number of diagnostic tests? (yes/no)	1/2
	Number of drugs prescribed? (yes/no)	1/2
	Hospitalizations instead of outpatient or homecare? (yes/no)	1/2
	Length of stay in hospital? (yes/no)	1/2
	Other (specify)? (yes/no)	1/2
H_Q33A-F	Who do you think should be responsible for reducing or stopping the misuse?	
	Individual Canadians? (yes/no)	1/2
	Doctors? (yes/no)	1/2
	Medical associations? (yes/no)	1/2
	Hospitals? (yes/no)	1/2
	Governments (local/municipal, provincial, federal)? (yes/no)	1/2
	Other (specify)	1/2
UT_Q6	During the past 12 months, did you ever need health care or advice but not receive it?	

	no	0
	yes	1
	not applicable	6
	not stated	9
UT_Q7U	Thinking of the most recent time, why did you not get care?	
	Difficulty getting access to health professional	1
	Financial constraints	2
	Felt health care provided inadequate	3
	Chose not to see health professional	4
	Other	6
	Not stated	9

Appendix B

Correlations Between Sociodemographic, Psychosocial, Health Services Utilization, Health Status, and Satisfaction With Health Care for the Young-Old

	Gender	Marital Status	Income	Educ	Immig	SOC	Self Esteem	Mastery	Soc Sup
Gender	--								
Marital Status	.270**	--							
Income Adequacy	.136**	.370**	--						
Education	.053*	.062**	.357**	--					
Immigrant	.046*	-.015	-.049*	.080**	--				
SOC	.037	.115**	.074**	.079**	.015	--			
Self-Esteem	-.012	.039	.048*	.065**	.013	.327**	--		
Mastery	.057*	.041	.161**	.156**	.085**	.523**	.447**	--	
Perceiv Social Support	-.061**	.087**	.073**	.077**	.060**	.172**	.063**	.133**	--
Social Involvement	-.120**	.044*	.079**	.091**	-.081**	.093**	.084**	.025	.101**
Frequency of Contact	-.080**	.024	.006	-.050*	-.108**	.111**	.040	.081**	.234**
Hospitalization	-.011	-.003	-.048*	-.014	-.009	-.028	-.078**	-.069**	-.003
Home Care	-.023	-.077**	-.097**	-.012	-.038	-.079**	-.091**	-.103**	.026
Health Professional	-.015	.040	.050*	.015	.017	-.034	.014	-.043	.082**
Alternative Hlth Prof	-.062**	-.014	.032	-.045*	.001	-.050*	-.028	-.080**	.038
Perceived Health	-.021	.037	.190**	.190**	.002	.272**	.248**	.318**	.036
Health Status	.060**	.030	.109**	.101**	.009	.329**	.237**	.367**	.080**
Can Health Care	.090**	-005	.128**	.180**	.123**	.184**	.102**	.174**	.119**
Prov Health Care	.084**	-.017	.109**	.162**	.151**	.150**	.088**	.169**	.114**
Personal Care	-.012	.058**	.118**	.110**	.071**	.054*	.006	.048*	.095**

Note. *p < .05, two-tailed. **p < .01, two-tailed.

...continued

Correlations Between the Sociodemographic, Psychosocial, Health Services Utilization, Health Status, and Satisfaction With Health Care for the Young-Old

	Soc Invol	Freq Contact	Hospital	Home Care	Hlth Prof	Altern Prof	Perceiv Hlth	Hlth Status	Canada Hlth	Prov Hlth
Gender										
Marital Status										
Income Adequacy										
Education										
Immigrant										
SOC										
Self-Esteem										
Mastery										
Perceiv Soc Sup										
Soc Invol	--									
Freq Contact	.145**	--								
Hospitalization	-.014	.052*	--							
Home Care	-.041	.004	.198**	--						
Hlth Prof	.041	.012	.068**	.031	--					
Alternative Prof	.038	-.004	.032	.014	.018	--				
Perceived Hlth	.101**	.064**	-.224**	-.205**	-.101**	-.007	--			
Health Status	.117**	.080**	-.165**	-.288**	-.058**	-.028	.477**	--		
Can Hlth Care	.013	.027	.031	.026	-.051*	-.055*	.132**	.131**	--	
Prov Hlth Care	.017	.011	.051*	-.015	.046*	-.046*	.138**	.162**	.841**	--
Personal Care	.039	.029	-.098**	.056*	.364**	.012	-.028	-.021	.351**	.349**

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

Correlations Between Province of Residence and Sociodemographic, Psychosocial, Health Services Utilization, Health Status, and Satisfaction With Health Care for the Young-Old

	BC	AB	SK	MN	ON	QUE	NB	NS	PEI	NFLD
Gender	.018	.013	.012	.009	.019	-.046*	-.004	-.016	.012	-.003
Marital Status	-.007	.044	.000	.029	-.043	.010	.014	-.018	.005	.015
Income	.008	.048*	-.028	-.025	.095**	-.076**	-.020	-.038	-.015	-.059*
Education	.074**	.020	-.021	-.057*	.116**	-.147**	.025	-.021	-.005	-.051*
Immigrant	.068**	.016	-.071**	-.006	.216**	-.193**	-.068**	-.069**	-.022	-.063**
SOC	.026	.008	.005	.003	.073**	-.137**	.018	.023	.013	.029
Self-Esteem	-.010	-.028	-.051*	-.059**	-.039	.145**	.007	-.035	-.011	-.044
Mastery	.029	-.021	-.042	-.028	.087**	-.077**	.015	.002	.002	-.016
Perceiv Soc Sup	.018	.066**	-.003	-.030	.107**	-.190**	.031	.031	.006	.018
Soc Invol	-.095**	.017	.027	.013	-.059**	.082**	.052*	.013	.021	.001
Freq Contact	-.044	.055*	.005	.043	-.025	-.074**	.060**	.069**	.039	.074**
Hospitalization	.004	.014	.010	.001	-.030	-.003	.007	.039	.000	.004
Home Care	.058**	-.003	.025	-.039	.013	-.049*	.004	-.001	-.004	-.006
Hlth Prof	-.014	.001	-.032	-.009	.057*	-.015	-.020	-.016	.005	-.024
Alternative Prof	.021	.003	.067**	-.029	-.004	-.012	-.007	-.017	-.009	-.022
Perceived Hlth	.059**	.006	-.052*	-.043	.044*	-.045*	-.001	-.041	.006	.022
Health Status	.039	-.029	-.025	-.028	.001	.001	-.001	.004	.009	.023
Can Hlth Care	.100**	.001	-.130**	-.033	.188**	-.179**	-.029	-.033	-.014	-.028
Prov Hlth Care	.074**	-.032	-.148**	-.046*	.205**	-.145**	-.023	-.036	-.018	-.029
Personal Care	-.020	-.030	-.058**	-.021	.154**	-.095**	-.006	.009	-.005	-.028

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

Appendix C

Correlations Between Sociodemographic, Psychosocial, Health Services Utilization, Health Status, and Satisfaction With Health Care for the Old-Old

	Gender	Marital Status	Income	Educ	Immig	SOC	Self Esteem	Mastery	Social Support
Gender	--								
Marital Status	.367**	--							
Income Adequacy	.161**	.307**	--						
Education	.022	.009	.264**	--					
Immigrant	.011	.038	-.042	-.045	--				
SOC	-.037	.034	.109*	.117*	-.068	--			
Self-Esteem	.003	.005	.098	.121*	-.123*	.376**	--		
Mastery	.035	-.057	.101	.137**	-.083	.568**	.488**	--	
Perceiv Social Support	-.038	.015	.144**	-.132**	-.049	.143**	.043	.068	--
Social Involvement	.014	.015	.093	.066	-.151**	.106*	.162**	.171**	.009
Frequency Contact	-.086	-.143**	-.029	-.005	-.068	.164**	.052	.127*	.111*
Hospitalization	.050	-.023	-.053	-.097	.121*	-.206**	-.100*	-.159**	-.051
Home Care	-.101*	-.080	-.167**	-.131**	.001	-.129*	-.091	-.217**	-.009
Health Professional	-.013	.140**	.164**	.072	-.020	.028	.002	.056	.072
Alternative Prof	.065	.066	-.004	.028	-.042	.034	.042	.085	.028
Perceived Health	-.006	-.076	.064	.111*	-.124*	.306**	.323**	.419**	.048
Health Status	.093	-.008	.073	.126*	-.163**	.378**	.355**	.440**	.105*
Can Health Care	-.031	.131**	-.048	.035	.048	.119*	.160**	.103*	.052
Prov Health Care	-.021	.106*	.010	.012	.103*	.045	.102*	.017	.066
Personal Care	.010	.129**	.046	.053	.070	.022	-.026	-.012	.042

Note. *p < .05, two-tailed. **p < .01, two-tailed.

...continued

Correlations Between Sociodemographic, Psychosocial, Health Services Utilization, Health Status, and Satisfaction With Health Care for the Old-Old

	Soc Invol	Freq Contact	Hospital	Home Care	Hlth Prof	Altern Prof	Perceiv Hlth	Hlth Status	Canada Hlth	Prov Hlth
Gender										
Marital Status										
Income Adequacy										
Education										
Immigrant										
SOC										
Self-Esteem										
Mastery										
Perceived Soc Sup										
Soc Invol	--									
Freq Contact	.095	--								
Hospitalization	-.082	-.020	--							
Home Care	-.066	.059	.383**	--						
Hlth Prof	.054	-.011	.099*	.072	--					
Alternative Prof	.066	.031	.105*	.074	.036	--				
Perceived Hlth	.164**	.194**	-.301**	-.234**	-.008	.046	--			
Health Status	.138**	.027	-.269**	-.364**	.009	.080	.470**	--		
Can Hlth Care	.092	.087	-.041	.079	.232**	-.077	.108*	.053	--	
Prov Hlth Care	.027	.015	-.047	.076	.252**	-.082	.093	-.012	.820**	--
Personal Care	.035	-.019	-.057	.122*	.451**	-.098*	-.030	-.047	.444**	.497**

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.

Correlations Between Province of Residence, Sociodemographic, Psychosocial, Health Services Utilization, Health Status, and Satisfaction With Health Care for the Old-Old

	BC	AB	SK	MN	ON	QUE	NB	NS	PEI	NFLD
Gender	-.010	-.020	-.015	-.030	-.094	.119*	.013	.063	-.044	.062
Marital Status	.036	-.034	-.002	.075	-.114*	.042	.001	.044	.006	.058
Income	-.039	-.001	-.134**	.001	.032	.120*	-.032	-.024	-.031	-.045
Education	.207**	.010	-.033	-.059	-.052	-.074	.025	-.016	-.007	-.055
Immigrant	.098*	-.011	-.007	.035	.064	-.071	-.100*	-.071	-.048	-.083
SOC	.076	.008	.037	.050	-.084	-.049	.053	-.009	.014	-.003
Self Esteem	-.025	-.011	-.088	-.026	-.022	.131**	.065	-.030	-.008	-.041
Mastery	.013	.045	.011	-.003	-.019	.025	.015	-.082	.010	-.051
Perceiv Soc Sup	-.058	-.070	.002	-.011	.127*	-.045	-.001	-.034	.008	.017
Soc Invol	-.066	.086	.104*	-.046	-.137**	.145**	.036	-.035	.026	-.010
Freq Contact	-.003	.004	.073	.066	.027	-.183**	.078	.029	.035	.038
Hospitalization	-.092	-.060	.005	.002	.112*	-.047	.007	.043	-.001	.033
Home Care	.075	-.029	.009	-.048	.015	-.040	.000	-.009	.016	-.033
Hlth Prof	-.040	-130**	-.033	-.017	.066	.042	.032	.031	.010	-.016
Alternative Prof	.140**	-.021	.007	-.047	-.020	-.095	.031	.038	-.010	-.027
Perceived Hlth	.078	-.041	.017	.054	-.106*	.078	-.048	-.090	-.009	.054
Health Status	.058	.022	.018	.029	-.085	-.012	.033	-.025	.012	.039
Can Hlth Care	.070	.001	-.098	-.067	.099*	-.032	-.093	-.036	-.017	.005
Prov Hlth Care	.054	-.094	-.136**	-.015	.073	.075	-.083	-.037	-.043	-.033
Personal Care	-.056	-.092	-.086	-.024	.174**	-.014	-.022	.000	-.006	-.039

Note. *$p < .05$, two-tailed. **$p < .01$, two-tailed.